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**INDIAN AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI**

I.A.R.I. 6

GIPNLK—4/JDIARI/60—16-3-61—5,000

BOTANICAL SERIES

FIELD MUSEUM OF NATURAL HISTORY

FOUNDED BY MARSHALL FIELD, 1893

VOLUME XIII

FLORA OF PERU

PART VI

BY

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PUBLICATION 364



CHICAGO, U.S.A.

SEPTEMBER 18, 1936

PRINTED IN THE UNITED STATES OF AMERICA
BY FIELD MUSEUM PRESS

FLORA OF PERU

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RUBIACEAE. Coffee Family

By Paul C. Standley

Trees, shrubs, or herbs with stipules; leaves opposite or verticillate, entire or rarely pinnatifid; flowers small or large and showy, perfect or rarely unisexual, usually regular; calyx tube adnate to the ovary (hypanthium), the limb of the calyx usually dentate or lobate, one or more of the lobes occasionally enlarged and foliaceous; corolla gamopetalous, variable in form; stamens as many as the corolla lobes, inserted commonly in the tube or throat of the corolla, the anthers 2-celled; ovary 1-10-celled, inferior; fruit 1-10-celled, usually baccate, drupaceous, or capsular; seeds 1 to many, small or large, often winged.

The family is represented generously in most tropical regions, and it is one of the largest of the Peruvian flora. Most of the Peruvian plants of the family are confined to the eastern slopes of the Andes. Those occurring in the temperate regions belong chiefly to the genera *Galium*, *Relbunium*, and *Arcytophyllum*.

Key to the Tribes

Ovary with 3 or more ovules in each cell.

Fruit dry.

Flowers in very dense, globose heads. Plants armed with hooked spines, more or less scandent, woody . . . I. *Naucleaeae*.

Flowers not in dense globose heads.

Seeds winged, vertically imbricate II. *Cinchoneae*.

Seeds not winged or, if winged, horizontal.

Corolla lobes imbricate or contorted, never valvate.

IV. *Rondeletiaeae*.

Corolla lobes valvate.

Seeds horizontal; stipules entire or bifid; trees or large shrubs III. *Condamineae*.

Seeds peltately attached; stipules often fimbriate; plants commonly herbs or low shrubs V. *Hedyotideae*.

Fruit fleshy.

Corolla lobes valvate in bud VI. *Mussaendeae*.

Corolla lobes imbricate or contorted in bud.

Seeds many, minute, pitted or rarely tuberculate.

VII. *Hamelieae*.

Seeds usually few and large, the testa smooth or fibrous.

VIII. *Gardenieae*.

Ovules 1 or 2 in each cell of the ovary.

Ovules 2 in each cell of the ovary. Fruit drupaceous, 5-7-celled.

IX. *Retiniphyllae*.

Ovules 1 in each cell.

Ovules pendulous.

Stamens inserted in the throat of the corolla tube.

X. *Guettardeae*.

Stamens inserted at the base of the corolla tube.

XI. *Chiococceae*.

Ovules erect or ascending.

Corolla lobes contorted XII. *Ixoreae*.

Corolla lobes valvate.

Ovules affixed to the base of the ovary.

Ovary 1-celled, or 2-celled but with a very thin septum.

XIII. *Coussareae*.

Ovary with two or more cells, the septum thick.

Flowers commonly dioecious; stamens usually inserted at the base of the corolla; plants chiefly herbaceous and prostrate XVI. *Anthospermeae*.

Flowers perfect; stamens inserted usually in the throat of the corolla; plants usually trees or shrubs, sometimes scandent.

Fruit drupaceous; plants not scandent.

XIV. *Psychotrieae*.

Fruit dry, dehiscent; plants scandent.

XV. *Paederieae*.

Ovules affixed to the septum. Stipules fimbriate or leaf-like; plants herbaceous or chiefly so.

Stipules fimbriate, not leaf-like XVII. *Spermacoceae*.

Stipules resembling the leaves and forming whorls with them.

XVIII. *Galieae*.

I. NAUCLEEAE

A single genus in Peru.....1. *Uncaria*.

II. CINCHONEAE

Corolla lobes valvate.

Placenta pendulous from the apex of the cell; flowers in elongate spikes, the corolla small.....2. *Alseis*.

Placenta ascending or erect, or adnate to the middle of the septum; flowers not spicate.

Placenta ascending or erect from the base of the septum; plants scandent, chiefly or wholly herbaceous.....3. *Manettia*.

Placenta adnate to the middle of the septum; plants not scandent.

Leaves varnished, with a metallic appearance.

4. *Stilpnophyllum*.

Leaves not varnished, not with metallic appearance.

Flowers solitary. A low shrub; corolla with a very long and narrow tube.....5. *Lecanosperma*.

Flowers numerous, in several- or many-flowered inflorescences; trees or large shrubs.

Capsule splitting from below upward...6. *Cinchona*.

Capsule splitting from above downward.

Corolla lobes bifid; fruit dehiscent by 4 spirally coiled valves.....7. *Joosia*.

Corolla lobes entire; fruit not dehiscent by 4 spirally coiled valves.

Capsule loculicidal.....8. *Macrocnemum*.

Capsule septicidal.

Valves of the capsule bifid.....9. *Remijia*.

Valves of the capsule entire.

Capsules small, barely 1 cm. long; flowers densely clustered.....10. *Pimentelia*.

Capsules large, commonly more than 2 cm. long, often much larger; flowers rather loosely clustered and usually pediceled.

11. *Ladenbergia*.

Corolla lobes imbricate or contorted.

Calyx lobes unequal, one of them expanded into a large red limb.

12. *Capirona*.

Calyx lobes equal or nearly so, none of them expanded into a colored limb.

Corolla lobes contorted, or one external in *Calycophyllum*.

Calyx caducous; seeds not winged, bearing a tuft of hairs at one end.....13. *Hillia*.

Calyx persistent; seeds winged.

Plants epiphytic; corolla tube 6-9 cm. long; leaves fleshy.

14. *Cosmibuena*.

Plants terrestrial trees or shrubs; corolla smaller; leaves not fleshy.

Corolla lobed to the middle or more deeply.

15. *Calycophyllum*.

Corolla with short lobes much shorter than the tube.

Stamens equal, the anthers included....16. *Loretoa*.

Stamens unequal, the anthers exerted.

17. *Ferdinandusa*.

Corolla lobes imbricate.

Corolla regular, with a slender tube.....18. *Exostema*.

Corolla somewhat zygomorphic, with broad tube.

19. *Coutarea*.

III. CONDAMINEAE

Calyx lobes unequal, one of them in some of the flowers expanded into a large red limb.....20. *Pogonopus*.

Calyx lobes equal or nearly so, none of them expanded and colored.

Calyx deciduous; corolla large.....21. *Condaminea*.

Calyx persistent; flowers small.....22. *Chimarrhis*.

IV. RONDELETIEAE

Corolla lobes imbricate.

Calyx lobes unequal, one of them expanded into a large red limb.

23. *Warscewiczia*.

Calyx lobes equal or nearly so, none of them expanded into a colored limb.

Leaves densely white-tomentose beneath.....24. *Rondeletia*.

Leaves not tomentose.

Flowers in terminal trichotomous cymes. Leaves subsessile;
corolla 12–15 mm. long. 25. *Dolichodelphys*.

Flowers in usually large and many-flowered panicles.

Seeds large; capsule loculicidal 26. *Sickingia*.

Seeds small; capsule septicidal 27. *Bathysa*.

Corolla lobes contorted.

Plants low herbs 28. *Sipanea*.

Plants shrubs or trees.

Flowers large, the green corolla almost 5 cm. long. Plants
glabrate 29. *Macbrideina*.

Flowers small, the colored or white corolla less than 2 cm. long.

Stipules persistent, exuding resin; leaves glabrate.

30. *Elaeagia*.

Stipules caducous, not resinous; leaves densely hairy.

31. *Phitopsis*.

V. HEDYOTIDEAE

Seeds angulate; plants annual 32. *Oldenlandia*.

Seeds plano-convex; plants chiefly perennial and often suffrutescent.

33. *Arcytophyllum*.

VI. MUSSAENDEAE

Inflorescence terminal.

Flowers arranged in involucrate heads; plants epiphytic.

34. *Schradera*.

Flowers paniculate; plants not epiphytic.

Panicles spike-like; flowers small 35. *Gonzalagunia*.

Panicles thyrsiform; flowers large 36. *Isertia*.

Inflorescence axillary.

Plants creeping herbs. Flowers usually in dense heads.

37. *Coccocypselum*.

Plants shrubs or trees, or sometimes herbaceous and scandent.

Leaves with many close striolae in the meshes of the veins.

Inflorescences 1–3-flowered 38. *Hippotis*.

Inflorescences few-many-flowered.

Leaves small and thin; plants much branched.

39. *Sommeria*.

- Leaves very large, coriaceous; plants chiefly simple or nearly so.....40. *Pentagonia*.
 Leaves without striolae in the meshes of the veins. Plants scandent.....41. *Sabicea*.

VII. HAMELIEAE

- Ovary 2-celled.....42. *Hoffmannia*.
 Ovary 4-5-celled.
 Corolla lobes contorted in bud.....43. *Bertiera*.
 Corolla lobes imbricate in bud.
 Corolla tubular.....44. *Hamelia*.
 Corolla short-funnelform.....45. *Bothriospora*.

VIII. GARDENIEAE

- Corolla somewhat irregular, the buds curved.....46. *Posoqueria*.
 Corolla regular, the buds not curved.
 Flowers perfect.
 Inflorescences terminal or terminal and axillary.
 Flowers in few- or many-flowered cymes.....47. *Tocoyena*.
 Flowers mostly solitary or fasciculate.
 Corolla tube equaling or scarcely exceeding the limb, usually shorter.....48. *Sphinctanthus*.
 Corolla tube usually much longer than the limb.49. *Randia*.
 Inflorescences lateral.
 Corolla tube villous in both throat and base; stigma tapering; testa of the seeds fibrous; trees.....50. *Genipa*.
 Corolla tube villous in throat or base but not in both; stigma not tapering; shrubs or small trees.
 Ovary 2-celled; native species.....49. *Randia*.
 Ovary 1-celled; cultivated species.....51. *Gardenia*.
 Flowers dioecious.
 Stipules forming a conic cap, connate into a sheath, deciduous above a circular slit, leaving a persistent basal caruncle.
 Staminate flowers in cymes, the pistillate usually solitary, rarely 2-3 in a head.....52. *Duroia*.
 Staminate and pistillate flowers both in cymes.53. *Amaioua*.

Stipules free or united only near the base, not forming a cap that is dehiscent by a transverse slit.

Staminate flowers lateral; plants usually armed with spines.

49. *Randia*.

Staminate flowers terminal; plants unarmed. 54. *Alibertia*.

IX. RETINIPHYLLEAE

A single genus in Peru. 55. *Retiniphyllum*.

X. GUETTARDEAE

Corolla lobes imbricate in bud.

Fruit separating into 2 narrow dry cocci. 56. *Machaonia*.

Fruit drupaceous, indehiscent. 57. *Guettarda*.

Corolla lobes valvate.

Tube of the corolla short and thick. 58. *Malanea*.

Tube of the corolla slender and elongate.

Corolla lobes corniculate outside at the apex. 59. *Chomelia*.

Corolla lobes not corniculate. 60. *Anisomeris*.

XI. CHIOCOCCEAE

A single genus in Peru. 61. *Chiococca*.

XII. IXOREAE

Calyx calyculate at the base; cultivated plants. 62. *Coffea*.

Calyx naked at the base; native plants. 63. *Ixora*.

XIII. COUSSAREAE

Seeds vertical; ovules connate, borne on a common basal column.

64. *Coussarea*.

Seeds horizontal; ovules separate in a 1-celled ovary, collateral, basilar. 65. *Faramea*.

XIV. PSYCHOTRIEAE

Ovary partly or almost wholly superior. 66. *Pagamea*.

Ovary inferior.

Flowers in elongate, interrupted spikes, crowded in dense groups at the nodes of the spikes, each group surrounded by a short, involucre of united bracts. 67. *Stachyococcus*.

Flowers not in interrupted spikes.

Inflorescence an involucrate head (heads often compound in *Cephaelis*).

Plants creeping herbs; seeds flat on the ventral side. 68. *Geophila*.

Plants usually large shrubs; seeds deeply furrowed on the ventral side. 69. *Cephaelis*.

Inflorescence not involucrate, or very rarely so.

Fruiting carpels much compressed laterally, the fruit didymous; plants low, herbaceous or suffrutescent. 70. *Declieuxia*.

Fruiting carpels not compressed laterally; plants mostly trees or shrubs.

Seeds with inrolled ventral surface; stipules pectinately lobed or with setiform appendages. 71. *Rudgea*.

Seeds not with inrolled ventral surface; stipules mostly entire or bilobate.

Corolla tube straight, not gibbous at the base. 72. *Psychotria*.

Corolla tube elongate, more or less curved, gibbous at the base. Branches of the inflorescence usually red or yellow. 73. *Palicourea*.

XV. PAEDERIEAE

A single genus in Peru. 74. *Paederia*.

XVI. ANTHOSPERMEAE

Fruit leathery, pyriform, deeply costate, splitting into 2 cocci. 75. *Corynula*.

Fruit a succulent, red, berry-like drupe. 76. *Gomezia*.

XVII. SPERMACOCEAE

Flowers in panicled umbels; plants scandent. 77. *Emmeorrhiza*.

Flowers not umbellate; plants usually not scandent.

Fruit not separating into cocci, the whole fruit circumscissile. 78. *Mitracarpus*.

Fruit separating into cocci.

Cocci indehiscent.

Cocci 3-4. 79. *Richardia*.

- Cocci 2.....80. *Diodia*.
 Cocci, at least one of them, dehiscent.
 Cocci opening only at the base. Flowers axillary.
 81. *Hemidiodia*.
 Cocci opening at the apex.
 Cells of the fruit unlike, one opening, the other remaining
 closed.....82. *Spermacoce*.
 Cells of the fruit alike, both opening.....83. *Borreria*.

XVIII. GALIEAE

- Calyx lobes developed, lanceolate.....84. *Sherardia*.
 Calyx lobes obsolete.
 Flowers surrounded by a calyx-like involucre.....85. *Relbunium*.
 Flowers not involucre.....86. *Galium*.

1. UNCARIA Schreb.

Scandent or trailing shrubs, armed with stout recurved spines; stipules interpetiolar, entire or bifid; leaves opposite, petiolate; flowers sessile or pedicellate, in solitary or racemose, pedunculate, spherical heads, 5-parted; calyx tubular or funnelform, dentate; corolla funnelform, the throat glabrous, the short lobes valvate in bud; stamens inserted in the corolla throat, exserted; fruit 2-celled, dry, fusiform, septicidally bivalvate; seeds few or numerous, winged and bicaudate.

Flowers pedicellate; leaves glabrous..... *U. guianensis*.
 Flowers sessile; leaves tomentulose beneath or strigose on the veins.
U. tomentosa.

Uncaria guianensis (Aubl.) Gmel. Syst. 370. 1796. *Ourouparia guianensis* Aubl. Pl. Guian. 177. pl. 168. 1775.

A large shrub with scandent or recurved branches; leaves short-petiolate, the blades oblong to broadly elliptic, 6-12 cm. long, obtusely short-acuminate, truncate to obtuse at the base; flower heads 2.5 cm. in diameter; calyx 4-5 mm. long, turbinate, tomentulose; corolla white, 11 mm. long, densely pilose, the lobes obtuse; fruit 3.5-4 cm. long, glabrate. "Unganangi."

Ayacucho: Choimacota Valley, 800 meters, *Weberbauer 7537*.—Cuzco: Cosñipata, 700 meters, *Weberbauer 6953*.—Loreto: Yurimaguas, in forest, *Williams 4170, 7844*. La Campuya, *W. Fox 94*. Río Itaya, *Williams 251*. Puerto Arturo, in pasture, *Williams 5193*.

—San Martín: Tarapoto, *Williams* 6525. Bolivia to Brazil and the Guianas.

Uncaria tomentosa (Willd.) DC. Prodr. 4: 349. 1830. *Nauclea aculeata* HBK. Nov. Gen. & Sp. 3: 382. 1819, non Willd. *N. tomentosa* Willd. ex R. & S. Syst. Veg. 5: 221. 1819. *Ouroparia tomentosa* Schum. in Mart. Fl. Bras. 6, pt. 6: 132. 1889.

A large, more or less scandent shrub, armed with stout spines; leaves short-petiolate, the blades thin, oval to ovate or broadly oblong, 10–15 cm. long, acute or short-acuminate, usually pale beneath and minutely tomentulose, often glabrate and strigose on the veins; flowers whitish, fragrant, the dense heads 2 cm. in diameter; corolla 8–10 mm. long, densely tomentulose; capsule 6–8 mm. long.

Loreto: Mouth of Río Santiago, *Tessmann* 4663. Also in Colombia, the Guianas, Trinidad, and Central America.

Of the collection cited I have seen only a fragment. Evidently it represents a species distinct from *U. guianensis*, but I do not feel certain that it is *U. tomentosa*, which is not known to occur between northern Colombia and Peru.

2. *ALSEIS* Schott

Trees or shrubs with opposite leaves; stipules short or elongate; flowers small, white or yellow, spicate, the spikes simple or branched, axillary and terminal; hypanthium obconic; calyx 5-lobate, the lobes broad or narrow, deciduous; corolla cylindric, short, pilose within, the limb 5-lobate, the lobes valvate; stamens inserted at the base of the corolla tube, the filaments villous; capsule oblong-turbinate, 2-celled, septicidally bivalvate from the apex; seeds linear-fusiform, the testa produced at each end.

Alseis peruviana Standl. Field Mus. Bot. 11: 179. 1936.

A tree, the branchlets fulvous-hispidulous; stipules deciduous, ovate, acuminate, 1–1.5 cm. long; leaves short-petiolate, membranaceous, the blades rhombic-oblongate or cuneate-obovate, 21–37 cm. long, 7–18 cm. wide, acute or acuminate, long-attenuate to the base, short-pilous above, densely hispidulous beneath; spikes 6–17 cm. long; calyx 1.2 mm. long, glabrate, the lobes unequal, lance-oblong, acute; corolla 2.5–3 mm. long, minutely fulvous-hispidulous.

Loreto: Puerto Arturo, Yurimaguas, 200 meters, in forest, *Williams* 5030, type.—San Martín: Juan Guerra near Tarapoto, *Williams* 6916. "Mishu-quiroy," "palo blanco."

3. MANETTIA L.

Plants scandent, herbaceous or suffrutescent; stipules interpetiolar, sometimes dentate or fimbriate; leaves opposite, herbaceous or coriaceous; flowers 4-parted, solitary and axillary or disposed in cymes or panicles, often brightly colored; calyx with 4 or 8 segments, these equal or unequal, persistent; corolla tubular or funnelform, the lobes valvate in bud, the tube usually pilose within above the base, the throat glabrous or villous; stamens included or exerted, the anthers linear; capsule 2-celled, septicidally dehiscent; seeds small, discoid, winged.

Calyx lobes 8, usually broad and foliaceous, united at the base into a short tube.

Leaves glabrous or practically so.

Corolla glabrous.....*M. glandulosa*.

Corolla sparsely or densely pubescent outside.

Capsule pyriform, acute at the base; leaf blades rounded at the base.....*M. tarapotensis*.

Capsule globose, rounded at the base; leaf blades acute at the base.....*M. coccinea*.

Leaves copiously pubescent beneath, at least when young.

Plants villous-pilose throughout with long, weak, shaggy hairs.

Corolla tube dilated above; calyx lobes broad; capsule globose.....*M. hispida*.

Plants short-pilose.

Corolla tube dilated above; leaves soon glabrate.

M. vacillans.

Corolla tube cylindric; leaves permanently pubescent.

Calyx lobes narrowly lanceolate, long-attenuate; capsule obovoid, acute at the base; flowers racemose.

M. racemosa.

Calyx lobes lanceolate or ovate; capsule globose, rounded at the base; flowers subumbellate.....*M. Schunkei*.

Calyx lobes 4.

Leaves tomentose beneath with matted hairs.

Calyx lobes minute, scarcely 1 mm. long.....*M. tomentulosa*.

Calyx lobes 1.5-4 mm. long.

Corolla glabrous outside.....*M. poliodes*.

Corolla villous or tomentose.

Calyx lobes triangular-ovate, 1.5–2 mm. long, in fruit as much as 4 mm.; tomentum of the lower leaf surface yellowish.....*M. peruviana*.

Calyx lobes lanceolate, 2–4 mm. long, in fruit as much as 1 cm.; tomentum whitish.....*M. Weberbaueri*.

Leaves not tomentose.

Corolla large, 3–5 cm. long.....*M. cordifolia*.

Corolla usually less than 1.5 cm. long.

Calyx lobes minute, ovate to lanceolate, erect or suberect, less than 2 mm. long, inconspicuous, never much thickened.

Young branches glabrous. Corolla tube 3 mm. long; flowers laxly paniculate.....*M. paniculata*.

Young branches pilose or villous.

Calyx lobes broadly ovate, obtuse.....*M. thysanophora*.

Calyx lobes triangular or lanceolate, acute or acuminate.

Capsule obtuse at the base; flowers racemose-paniculate.

M. veronicoides.

Capsule acute at the base; flowers subumbellate.

M. modica.

Calyx lobes large or elongate, usually much more than 2 mm. long, sometimes recurved, often conspicuous and leafy, frequently much thickened.

Corolla villous or pilose outside.

Tube of the corolla about 6 mm. long; leaves oblong-lanceolate.....*M. acutifolia*.

Tube of the corolla 12 mm. long; leaves elliptic.

M. asclepiadacea.

Corolla glabrous outside.

Calyx lobes united at the base into a short tube, recurved.

M. divaricata.

Calyx lobes free or nearly so, not recurved.

Calyx lobes ovate or orbicular, obtuse or rounded at the apex.

Corolla tube 12–14 mm. long.....*M. dubia*.

Corolla tube 5–6 mm. long.....*M. umbellata*.

Calyx lobes lanceolate or linear-lanceolate, acute or acuminate.

Leaves large, about 6 cm. wide *M. glandulosa*.

Leaves smaller, 3 cm. wide or less.

Calyx lobes 6-10 mm. long; leaves coriaceous.

M. Albert-Smithii.

Calyx lobes 3-3.5 mm. long; leaves thin.

M. leucantha.

Manettia acutifolia R. & P. Fl. 1: 58. pl. 89, f. b. 1798. *M. acutiflora* Pers. Syn. Pl. 1: 134. 1805. *Lygistum acutifolium* Kuntze, Rev. Gen. 1: 287. 1891.

A large, slender vine; stipule lobes short, acute; leaves short-petiolate, thin, the blades 1.5-3 cm. wide, long-acuminate, rounded or obtuse at the base, glabrous or nearly so; flowers congested in the leaf axils; hypanthium pilose, the calyx lobes linear-lanceolate or linear-oblong, long-attenuate, erect; corolla purple or white, densely pilose outside, the tube 6 mm. long. Neg. 218.

Cuzco(?): Type collected between Acomayo and Pati, *Ruiz & Pavón* (photo. and fragm. of authentic material seen, ex hb. Berol.).—Huánuco: Río Huallaga Canyon below Río Santo Domingo, climbing over shrubs, 1,200 meters, *Macbride 4255*.

Manettia Albert-Smithii Standl. Field Mus. Bot. 8: 151. 1930.

A scandent herb, the stems glabrous; stipules acute, sometimes fimbriate, 2-2.5 mm. long; leaves short-petiolate, coriaceous, the blades oblong-lanceolate to ovate, 1.5-3 cm. wide, acuminate, obtuse at the base, glabrous; inflorescence racemiform, the flowers short-pedicellate; hypanthium glabrous; calyx lobes erect, green, coriaceous, lanceolate, acute or acuminate; corolla white, glabrous outside, the tube 6-7 mm. long, the lobes 6-7 mm. long, long-villous within; capsule subglobose, 6-7 mm. long, obtuse or abruptly contracted at the base.

Ayacucho: Carrapa, 1,200 meters, wooded hillside, *Killip & Smith 22418*, type. Aina, 750-1,000 meters, in thickets, *Killip & Smith 23104*.

Manettia asclepiadacea Standl. Field Mus. Bot. 8: 332. 1931.

Stems retrorse-pilosulous; stipules setulose-pectinate; leaves petiolate, the blades membranaceous, elliptic, 4.5-5.5 cm. wide, long-acuminate, acute at the base, glabrous, the veins obscure, paler beneath; flowers umbellate in the leaf axils, the pedicels 5-9 mm. long; hypanthium densely pilosulous; calyx lobes lanceolate or narrowly ovate, 8-10 mm. long, green; corolla white-pilose outside, the white

tube 12 mm. long, the lobes yellow with purple tips, 4.5 mm. long; capsule obovoid, acute or attenuate at the base.

Loreto: San Antonio, Río Itaya, 110 meters, dense forest, *Killip & Smith 29476*, type. Also in Ecuador.

Manettia coccinea (Aubl.) Willd. Sp. Pl. 1: 624. 1797. *Nacibea coccinea* Aubl. Pl. Guian. 96. pl. 37, f. 1. 1775.

Stems usually glabrous; stipules truncate, denticulate; leaves herbaceous, petiolate, the blades lanceolate to ovate, 3–10 cm. long, acute or acuminate, acute to obtuse at the base; flowers chiefly axillary; calyx lobes 8, linear or oblanceolate, 4–14 mm. long, foliaceous, ciliate, recurved; corolla red, 17–25 mm. long, more or less pilose; capsule subglobose, 6–12 mm. long, rounded at the base.

Huánuco: Posuso, 600 meters, over sunny shrubs, *4592*.—Loreto: Between Río Nanay and Río Napo, in forest, *Williams 686*. Widely distributed in the lowlands of tropical America, ranging northward to Mexico.

Manettia cordifolia Mart. Denkschr. Acad. Muench. 9: 95. pl. 7. 1824. *Guagnebina ignita* Vell. Fl. Flum. 45. pl. 115. 1825. *M. ignita* Schum. in Mart. Fl. Bras. 6, pt. 6: 170. 1889.

A large, herbaceous vine; leaves short-petiolate, membranaceous, ovate to lance-oblong, long-acuminate, rounded or obtuse at the base, finely pubescent beneath; flowers chiefly axillary and solitary, long-pedicellate; calyx lobes 4, oblong or lanceolate, usually unequal, large and foliaceous; corolla bright red, glabrous outside, 3–5 cm. long, the tube dilated above, the lobes very short. Neg. 193.

Huánuco: Posuso, López to Cueva Blanca, *Pearce 215* (teste Wernham).—San Martín: San Roque, abandoned land, *Williams 7773, 7479*.—Department unknown: Without locality, *Weberbauer 6560; Pavón; Mathews 1343*. Andes at 1,500–2,400 meters, *Pearce 590* (teste Wernham). Bolivia to Brazil and Argentina.

Manettia cordifolia* var. *attenuata (Nees & Mart.) Wernham, Gen. Manettia 20. 1919. *M. attenuata* Nees & Mart. Act. Soc. Nat. Cur. 12: 14. 1825.

Similar to the species, but the upper leaves, at least, narrowly lanceolate or linear-lanceolate, acute at the base, finely pubescent beneath.

San Martín: Lamas, *Williams 6406*. Near Tarapoto, *Spruce 3929*. Also in Brazil.

Manettia cordifolia var. **glabra** (C. & S.) Standl. Field Mus. Bot. 7: 263. 1931. *M. glabra* C. & S. Linnaea 4: 159. 1829. *M. micans* P. & E. Nov. Gen. & Sp. 3: 24. 1845.

Like the species, but the leaves glabrous. Neg. 192.

Huánuco: Posuso, rocky wooded slopes, 600 meters, 4722. Puerto Victoria, 300 meters, wooded river banks, *Killip & Smith 26823*.—Junín: La Merced, 600 meters, river cliffs, 5585. Vitoc, Ruiz. Chanchamayo Valley, 1,800 meters, *Schunke 480, 1519, 1430*. San Ramón, 900–1,300 meters, edge of woods, *Killip & Smith 24748*. Huacapistana, *Weberbauer 1967*. La Merced, *Killip & Smith 29519*. Río Perené, 600 meters, in forest, *Killip & Smith 25213*.—Loreto: Type of *M. micans* from Yurimaguas, *Poeppig*. Yurimaguas, 135 meters, dense forest, *Killip & Smith 27990*. Balsapuerto, 220 meters, *Klug 3080*. San Lorenzo, *Killip & Smith 29200*.—Madre de Dios(?): Seringal San Francisco, Río Acre, *Ule 9864*.—San Martín: Between Moyobamba and Tarapoto, *Raimondi 490*. Tarapoto, *Mathews 1343*. Río Huallaga, *Spruce 4592*. Zepelacio, 1,200–1,600 meters, *Klug 3541*. Pongo de Cainarachi, 230 meters, *Klug 2606*. Ranging to Brazil and Argentina.

The variety is much more frequent in most parts of the range than the typical form of the species. It must be a handsome and showy plant, with its large and brilliantly colored flowers.

Manettia divaricata Wernham, Gen. Manettia 41. 1919.

A large, herbaceous vine, glabrous throughout or nearly so; stipules small and inconspicuous, deciduous; leaves slender-petiolate, blackish when dried, papyraceous, the blades elliptic to ovate-oblong, acutely acuminate, acute at the base; flowers few, axillary and solitary or in 3-flowered cymes; calyx lobes fleshy, ovate or lanceolate, acuminate, 3–5 mm. long; corolla lilac-rose or with purplish green tube and dull pink lobes, the stout tube 15 mm. long, the rather short lobes recurved; capsule large, obovoid, acutish at the base or obtuse.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith 26615*.—Loreto: Lower Río Nanay, *Williams 564*. Masisea, 275 meters, open woods, *Killip & Smith 26848*. Mishuyacu, 100 meters, in clearing, *Klug 849*. Iquitos, in forest, *Killip & Smith 29858*. Also in Bolivia.

Manettia dubia Wernham, Gen. Manettia 31. 1919.

Stipules deltoid, acuminate; leaf blades elliptic, 6.5–8.5 cm. long, obtuse or acuminate, rounded at the base, glabrous; calyx lobes

ovate-orbicular, mucronate-acute, 6 mm. long; corolla blue, glabrous outside, the tube 12–13 mm. long, the lobes 4–5 mm. long.

Ayacucho: Type from Puitac, at 3,000–3,300 meters, *Pearce*. Known to the present writer only from description.

Manettia glandulosa P. & E. Nov. Gen. & Sp. 3: 24. 1845. *Lygistum glandulosum* Kuntze, Rev. Gen. 1: 287. 1891.

Stipules deltoid, glandular-ciliate; leaves glabrous, subcoriaceous, the blades as much as 12.5 cm. long, acuminate, shining, especially beneath; peduncles axillary, 1–several-flowered; calyx lobes 4 or 8, lanceolate, half as long as the corolla; corolla small, glabrous, pink; capsule oval, didymous, glabrous.

Loreto: Type from forests of Yurimaguas, *Poeppig*. Reported by Wernham (Gen. *Manettia* 38. 1919) from Río Huallaga, Yurimaguas, *Spruce* 3874. Known to the present writer only from description.

Manettia hispida P. & E. Nov. Gen. & Sp. 3: 24. pl. 228. 1845. *Lygistum hispidum* Kuntze, Rev. Gen. 1: 287. 1891.

A large, suffrutescent vine, villous-pilose throughout with long, spreading, whitish hairs, the stems straw-colored; stipules oblong, acute; leaves on short, stout petioles, the blades broadly elliptic to oblong, acuminate, acute at the base; flowers few and axillary, long-pedicellate, often umbellate; calyx lobes 7, oval-spatulate; corolla red or pinkish red, copiously long-pilose, the tube 15 mm. long; capsule ovoid or globose, villous. Neg. 216.

Huánuco: Cerro de San Cristóbal, near Cochero, *Poeppig*.—Loreto: Yurimaguas, *Poeppig* 2321 (photo. and fragm. ex hb. Berol.). Fortaleza, Yurimaguas, edge of forest, *Williams* 4299. Puerto Arturo, in forest, *Williams* 5315. Balsapuerto, 220 meters, *Klug* 3024. Santa Rosa, 135 meters, dense forest, *Killip & Smith* 28906. Yurimaguas, 135 meters, in forest, *Killip & Smith* 29115.—San Martín: Lamas, in forest, *Williams* 6483.—Department unknown: Without locality, *Poeppig* 235; *Pavón* (labeled “*Besleria* sp. nova”).

Manettia leucantha Krause, Repert. Sp. Nov. 19: 308. 1924.

A slender, herbaceous vine, the stems glabrous or nearly so; stipules subulate-aristate; leaves short-petiolate, the blades lanceolate or ovate-lanceolate, 5–8 cm. long, long-acuminate, acute or obtuse at the base, glabrous; calyx lobes linear-lanceolate, acute, 3–3.5 mm. long; corolla white, the tube 4–6 mm. long, the lobes acute, slightly shorter than the tube; capsule subglobose, glabrate. Neg. 210.

Huancavelica: Río Mantaro, below Huancamayo, in forest, 1,500 meters, *Weberbauer 6573*, type collection.

Manettia modica Standl. Field Mus. Bot. 4: 275. 1929.

Suffrutescent, with stramineous branches, the young branchlets villosulous; stipules truncate, bearing a few subulate setae; leaves short-petiolate, the blades lanceolate or ovate-lanceolate, 2-3.5 cm. long, long-acuminate, obtuse at the base, sparsely villous, pale beneath, the margins revolute; flowers umbellate-paniculate, pedicellate; calyx lobes broadly ovate, acute; capsule obovoid, 5 mm. long, acute and long-attenuate at the base.

Huánuco: Vilcabamba, Río Chinchao, 1,800 meters, climbing over shrubs, *Macbride 5154*, type.

Manettia paniculata P. & E. Nov. Gen. & Sp. 3: 24. 1845.
Lygistum paniculatum Kuntze, Rev. Gen. 1: 288. 1891.

A slender, herbaceous vine, glabrous; stipules broad, short, acutish; leaves on short, slender petioles, the blades lance-oblong, about 7.5 cm. long and 2.5 cm. wide, acuminate, acute to rounded at the base, glabrous, paler beneath; flowers arranged in lax, open panicles, the flowers long-pedicellate; calyx lobes oblong, obtuse, thick, half as long as the corolla, somewhat spreading; corolla tube 3 mm. long. Negs. 25688, 202.

Loreto: Forests of Yurimaguas, Mainas, *Poeppig 2462* (photo. and fragm. of type material, ex hb. Berol.). Wernham (Gen. Manettia 30. 1919) reports also a specimen collected by Poeppig at Casapi (Huánuco).

Manettia peruviana Standl. Field Mus. Bot. 4: 274. 1929.

A scandent shrub, the branchlets densely villous; stipules triangular, acute, 2.5 mm. long; leaves almost sessile, the blades thick, oblong-ovate, 2.5-4.5 cm. long, acute or short-acuminate, rounded at the base, scabrous and villosulous-puberulent above, densely tomentose beneath; flowers umbellate, long-pedicellate; calyx lobes triangular-ovate, 1.5-2 mm. long; corolla dark red, short-villous, the tube 8 mm. long, the obtuse lobes 2 mm. long; capsule didymous-globose, 5-6 mm. wide. "Pushpu-hoirer."

Huánuco: Mito, 2,700 meters, twining on shrubs of sunny slopes, *Macbride & Featherstone 1395*, type. Tambillo, 2,400 meters, *3571*.—Junín: Mountains west of Huacapistana, 2,400 meters, *Weberbauer 2287*.

Manettia pollodes Standl. Field Mus. Bot. 8: 151. 1930.

A large vine, the young branchlets densely villosulous-tomentose; stipules 2 mm. long, 3-denticulate; leaves short-petiolate, the blades membranaceous, ovate-elliptic or oblong-ovate, 4–8 cm. long, acuminate, rounded or obtuse at the base, green above, sparsely villosulous, densely tomentose beneath; flowers umbellate-cymose, slender-pedicellate; calyx lobes ovate, acute or acuminate; corolla violaceous, the tube 7–10 mm. long, the triangular-ovate lobes 2–2.5 mm. long; capsule subglobose, 5 mm. long, obtuse at the base.

Cuzco: Marcapata Valley, near Chilechile, 2,500 meters, in thicket, *Weberbauer* 7863, type. Below Lares, 3,100 meters, in thicket, *Weberbauer* 7890. Valle del Apurímac, Mollepata, 2,750 meters, *Herrera* 1230.

Manettia racemosa R. & P. Fl. 1: 58. pl. 89, f. a. 1798. *M. mutabilis* Pers. Syn. Pl. 1: 134. 1805. *Nacibea mutabilis* Poir. in Lam. Encycl. Suppl. 4: 55. 1816. *Lygistum racemosum* Kuntze, Rev. Gen. 1: 288. 1891.

A large, herbaceous vine; stipules acuminate, ciliate; leaves slender-petiolate, the blades membranaceous, ovate to elliptic-oblong, more or less villous or pilosulous, at least beneath along the nerves, acute or acuminate, acute to obtuse at the base; flowers few, cymose or axillary and short-racemose; calyx lobes usually 8, linear or lanceolate, large and elongate, herbaceous, often recurved; corolla purplish or red-violet, villous; capsule ellipsoid, sparsely villous or pilosulous, 12 mm. long, acute at the base. Neg. 221.

Huánuco: Described from Cochero, Chinchao, Cassape, Macora, Marimarchahua, and Hualqui, *Ruiz & Pavón* (photo. and fragm. seen, ex hb. Berol.).—Loreto: Mishuyacu, 100 meters, in marsh, *Klug* 1164.—Locality unknown: *Pavón*; *Dombey* 553.—San Martín: Zepelacio, 1,200–1,600 meters, mountain forest, *Klug* 3609.

Manettia Schunkei Standl. Field Mus. Bot. 4: 273. 1929.

Plants scandent, herbaceous or suffrutescent, the slender stems at first reflexed-hirtellous; stipules triangular, acute; leaves short-petiolate, firm-membranaceous, the blades lance-ovate or ovate-elliptic, 2.5–5.5 cm. long, acuminate, rounded or obtuse at the base, sparsely scaberulous above, densely scaberulous beneath; cymes axillary, umbelliform, the flowers slender-pedicellate; calyx lobes 8, foliaceous, lanceolate or ovate, 3–4 mm. long; corolla red, sparsely

puberulent, the tube 13 mm. long, the ovate lobes 6 mm. long; capsule small, didymous-globose, obtuse or rounded at the base.

Junín: Chanchamayo Valley, 1,200 meters, *Schunke 362*, type; at 1,200–1,500 meters, *Schunke 1428, 1461, 1444*. Colonia Perené, 600 meters, in forest, *Killip & Smith 25202*.

***Manettia tarapotensis* Wernham, Gen. *Manettia* 38. 1919.**

A large, herbaceous vine, the stems puberulent; stipules truncate, glandular-denticulate; leaves slender-petiolate, the blades subcoriaceous, ovate or ovate-elliptic, acuminate, rounded at the base and abruptly contracted, glabrous, 6–9 cm. long; flowers in rather dense and many-flowered umbels, long-pedicellate; calyx lobes 8, linear, 5–6 mm. long or more; corolla puberulent, the tube 12–13 mm. long; capsule pyriform, 1 cm. long or larger, thinly tomentulose.

San Martín: Type from Tarapoto, *Spruce 4076, 4426*. Rumizapa, *Williams 6764*. Tarapoto, in forest, *Williams 6105, 6528*.

***Manettia thysanophora* Wernham, Gen. *Manettia* 28. 1919.**

A rather coarse vine; stipules united, reflexed, fimbriate; leaves short-petiolate, membranaceous, the blades elliptic or broadly ovate, 3.5–5 cm. long, acuminate, acute at the base, glabrate and green above, pale beneath and when young sparsely hirtous; flowers numerous, subumbellate in the axils, slender-pedicellate; calyx lobes 4, broadly ovate, usually obtuse, glabrous, 1 mm. long; corolla glabrous outside, the tube 5 mm. long, the lobes 2 mm. long.

Peru, without locality, *Mathews 1501*, type collection.

***Manettia tomentulosa* Standl. Field Mus. Bot. 4: 273. 1929.**

Young branchlets densely puberulent or short-villous; stipules subtruncate, lacinate-dentate; leaves petiolate, thick-membranaceous, the blades oblong-ovate to lance-oblong, 3–7 cm. long, acuminate, rounded or obtuse at the base, sparsely appressed-pilose above or glabrate, minutely and densely tomentulose beneath; flowers in axillary umbels, slender-pedicellate; capsule subglobose, 3.5 mm. long, minutely puberulent, rounded at the base; calyx lobes oblong or ovate, obtuse.

Junín: La Merced, 1,200 meters, climbing over bushes, *Macbride 5772*, type. Huacapistana, 1,800–2,400 meters, in thickets, *Killip & Smith 24141*.

***Manettia umbellata* R. & P. Fl. 1: 58. pl. 90, f. a. 1798. *Lygistum umbellatum* Kuntze, Rev. Gen. 1: 288. 1891.**

A large, glabrous vine, herbaceous or suffrutescent; stipules short, triangular-apiculate; leaves short-petiolate, subcoriaceous, the blades ovate to oblong or elliptic, acuminate, obtuse or rounded at the base; flowers umbellate or short-racemose in the leaf axils, slender-pedicellate; calyx lobes 4, ovate, obtuse or acute, thick; corolla blue, glabrous, the stout tube 6–7 mm. long, the lobes short, triangular-ovate; capsule globose-ovoid, 7 mm. long. Neg. 199.

Ayacucho: Choimacota Valley, 2,800 meters, *Weberbauer 7572*.—Huánuco: Described from Muña, *Ruiz & Pavón* (photo. and fragm. of authentic material seen, ex hb. Berol.; labeled as from Parrashuas). Vilcabamba, 1,800 meters, *5153*. Pano, 2,700 meters, a vine over shrubs, *3614*. Pampayacu, *Kanehira 104*.—Madre de Dios: Seringal San Francisco, Río Acre, *Ule 9863*.

***Manettia vacillans* Standl.** Field Mus. Bot. 4: 272. 1929.

Scandent, suffrutescent, the young branchlets densely puberulent; stipules acute, 2 mm. long; leaves short-petiolate, membranaceous, the blades elliptic or broadly ovate, 2.5–3.5 cm. long, short-acuminate, rounded or obtuse at the base, sparsely appressed-pilose above at first, beneath sparsely tomentulose on the veins or almost glabrous; inflorescences subumbellate, axillary, few-flowered; hypanthium tomentulose; calyx lobes unequal, lanceolate or ovate, 2.5–5 mm. long, acuminate, spreading or recurved; corolla reddish white, turning rose, the tube 11–12 mm. long, the ovate, obtuse lobes 3–5 mm. long.

Ayacucho: Mountains northeast of Huanta, 3,100 meters, moist ravine, *Weberbauer 7509*, type.

***Manettia veronicoides* Standl.** Field Mus. Bot. 4: 272. 1929.

A slender vine, the young stems sparsely puberulent; stipules broadly triangular, acuminate; leaves almost sessile, the blades ovate or ovate-lanceolate, 2.5–4.5 cm. long, long-acuminate, rounded or obtuse at the base, glabrous above, sometimes tomentulose beneath along the nerves; flowers umbellate-paniculate, short-pedicellate; calyx lobes oblong-triangular, acute, 1–1.5 mm. long; corolla glabrous, the tube 2.5 mm. long, the lobes of the same length; capsule obovoid-globose, 3–4 mm. long, obtuse at the base.

Cuzco: Between the tambos Tres Cruces and Tambomayo, 2,400 meters, *Weberbauer 6971*, type.

***Manettia Weberbaueri* Krause,** Repert. Sp. Nov. 19: 309. 1924.

Stipules acuminate; leaves short-petiolate, the blades lance-oblong to ovate or elliptic, 2–4 cm. long, short-acuminate, acute or

acutish at the base, sparsely appressed-pilose or glabrate above, pale-tomentose beneath; flowers loosely cymose; calyx lobes lanceolate or ovate-lanceolate, acute, pilose, at first 2-4 mm. long, later accrescent; corolla pink, the tube 6-9 mm. long, appressed-pilose, the lobes 2-2.5 mm. long; capsule subglobose, 5 mm. long, broadly obtuse at the base, sparsely pilose or almost glabrous. Neg. 222.

Cajamarca: San Pablo, 2,400-2,700 meters, *Weberbauer 3808*, type collection (photo. and fragm. seen, ex hb. Berol.).

4. STILPNOPHYLLUM Hook. f.

Glabrous shrubs; stipules caducous; leaves opposite, petiolate, coriaceous; flowers small, in small, axillary panicles, 5-parted; calyx cupular, 5-dentate, eglandular, persistent; corolla campanulate-funnelform, coriaceous, the tube villous within at the base, the lobes half as long as the tube, valvate in bud; stamens inserted in the corolla throat, the anthers linear; ovary 2-celled, with numerous ovules in each cell.—The genus consists of a single species.

Stilpnophyllum lineatum Hook. f. *Icon. Pl. pl. 1147*. 1873; Schum. in Mart. *Fl. Bras. 6*, pt. 6: 158. *pl. 111*, f. 2. 1889. *Elaeagia lineata* Spruce ex Schum. loc. cit.

A shrub 3 meters high; leaf blades oblong-lanceolate or obovate-oblong, 5-9 cm. long, short-acuminate, acute at the base, lustrous; panicles 2 cm. long, much shorter than the leaves; hypanthium turbinate; calyx 1 mm. long, the teeth ovate-triangular, minutely pilosulous; corolla 5-6 mm. long, minutely puberulent, the lobes oblong, acute, recurved.

San Martín: Summit of Cerro Pelado near Tarapoto, *Spruce 4568*, type collection.

5. LECANOSPERMA Rusby

Stiff, much branched shrubs; stipules short, persistent; leaves opposite, small, short-petiolate; flowers terminal, solitary; calyx 5-parted, the lobes narrow, foliaceous; corolla salverform, with a slender, elongate tube and broad, spreading lobes, the tube villous within at the insertion of the stamens; stamens inserted in the throat of the corolla, the anthers sessile; capsule subglobose, loculicidally bivalvate; seeds rather few, compressed, imbricate, narrowly winged.—The genus consists of a single species.

Lecanosperma lycioides Rusby, *Bull. Torrey Club 20*: 431. *pl. 168*. 1893.

A dense shrub 2 meters high or less, the branchlets often sub-spinose; leaf blades elliptic-oblong, 3–12 mm. long, glabrous or nearly so; corolla white, the tube nearly 2 cm. long; capsule 6 mm. long.

Apurímac: Between Amorayana and Safaica, 2,700 meters, Weberbauer 7174. Also in Bolivia.

6. CINCHONA L.

Trees or shrubs, glabrous or variously pubescent; stipules large, distinct, caducous; leaves opposite, petiolate; inflorescence terminal, paniculate, with opposite branches, usually many-flowered; flowers 5-parted; calyx campanulate, dentate or lobate; corolla salverform, pubescent outside, the spreading lobes valvate in bud, more or less villous within along the margins; stamens semi-exserted or included, with short or elongate filaments, the anthers linear; capsule ovoid or oblong to subcylindric, bisulcate, dehiscent from the base to apex, many-seeded; seeds broadly winged.

The genus contains some of the most important drug plants of the world, the source of quinine, the universal remedy for malaria. In former years large amounts of cinchona bark were exported from Peru as well as from other regions of the Andes, particularly Bolivia and Ecuador. The gathering of the bark involved the destruction of the trees, and the supply of wild trees was finally almost exterminated. The greater part of the quinine now used in medicine is obtained from trees cultivated in the East Indies.

There is a vast literature relating to the taxonomy and economic applications of the genus. Those interested particularly in medicinal properties of the plants made intensive studies of them, describing a great number of forms as species. Many forms of the trees were distinguished by the men who collected the bark, and various races that differ but slightly in characters of foliage and flowers seem to vary greatly as to their quinine content. Because of the large number of names concerned, the synonymy of the genus is exceedingly involved. The differences between the supposed species are poorly marked and imperfectly understood, or perhaps rather confused by the excess of attention paid to the forms. It is, therefore, discouraging to attempt to present a reasonable account of the species.

The following enumeration of the *Cinchona* species is far from satisfactory, but it will perhaps permit a sufficiently fine segregation of the species. The greater number of the names in the genus relate to forms of *C. officinalis* and *C. pubescens*. The species vary greatly,

but even after the examination of a large amount of authentic material of their segregates, it does not seem possible to recognize more than a few true species in the genus. The writer believes that the greater part of the names published under the genus pertain to forms of scarcely or not at all more significance botanically than horticultural varieties of common garden vegetables.

Because of the involved synonymy, it is by no means certain that all the names listed below are correctly placed. The most of them, however, are of little importance, and it matters little what disposal is made of them.

Leaves hirsute, hispid, or hispidulous beneath, at least on the costa and nerves, the hairs stiff and spreading.

Leaves firm-membranaceous or subcoriaceous, usually dull, hirsute or hispidulous beneath over the whole surface.

Leaves glabrate on the upper surface, long-hirsute beneath.

C. Humboldtiana.

Leaves appressed-pilose or glabrate on the upper surface, densely short-pilose beneath.....*C. Delessertiana.*

Leaves mostly thick-coriaceous, lustrous, hirsute or hispid chiefly on the costa and nerves.

Calyx 1.5-2 mm. long, densely appressed-pilose.

C. glandulifera.

Calyx 4-5 mm. long, glabrous or glabrate.....*C. hirsuta.*

Leaves glabrous beneath, or pilosulous or villosulous with weak or short, often appressed hairs, never hirsute or hispid.

Corolla 14-17 mm. long; leaves mostly firm-coriaceous, relatively small.....*C. officinalis.*

Corolla 6-12 mm. long; leaves comparatively thin and large.

Corolla 10-12 mm. long; leaves usually copiously pubescent beneath.....*C. pubescens.*

Corolla 6-8 mm. long; leaves glabrous or glabrate beneath except along the costa.

Calyx lobes linear-subulate.....*C. amazonica.*

Calyx lobes deltoid.....*C. micrantha.*

***Cinchona amazonica* Standl. Field Mus. Bot. 8: 334. 1931.**

A medium-sized tree; leaves petiolate, the blades thick-membranaceous, obovate-elliptic, 15-25 cm. long, 8-12 cm. wide, obtuse or acutish and abruptly short-acuminate, narrowed to the base,

glabrous above, beneath sparsely and minutely sericeous or almost glabrous; panicle large and broad, the branches densely puberulent or sericeous, the flowers mostly sessile; hypanthium densely sericeous; calyx 5-parted, 1.5-2 mm. long, minutely sericeous, the lobes linear-attenuate; corolla 3.5-4 cm. long, densely tomentulose, the lobes equaling the tube.

Loreto: Pebas, on the Amazon, *Williams* 1747, type. Also in adjacent Brazil.

Cinchona carabayensis Wedd. Ann. Sci. Nat. III. 10: 9. 1848. *C. Pahudiana* Howard, Nueva Quinol. Pav. pl. 21. 1862. *C. carabayensis* var. *lanceolata* Miq. Ann. Mus. Bot. Lugd. Bat. 4: 270. 1868-69. (?) *C. Hasskarliana* Miq. op. cit. 4: 266. 1868-69.

A shrub 1-3 meters high, the trunk 3-4 cm. thick; stipules obovate-oblong, much longer than the petioles; leaf blades ovate-elliptic or lanceolate, 8-12 cm. long, 4-7 cm. wide, acute at each end or rarely obtuse, coriaceous, glabrate above, pubescent-tomentose beneath; calyx teeth triangular-lanceolate, acute; capsule oblong-lanceolate or ovate-lanceolate, pubescent.

Puno: Described from thickets on the summits of the mountains between the valleys of the Province of Carabaya, especially near San Juan del Oro. Formerly, at least, planted in Java as a source of quinine.

Weddell did not describe the flowers of this species, and its position is consequently uncertain. It may be only a form of *C. officinalis*, although in that species the leaves ordinarily are nearly glabrous. Weddell states that the plant is called "cascarilla de las lomas," and that it probably withstands a greater degree of cold than any other member of the genus.

Schumann in the Flora Brasiliensis (6, pt. 6: 141. pl. 97) describes and illustrates *C. carabayensis*, but since the writer has seen no material of the species, even with his account of it there is difficulty in placing the plant. If his description of the flowers is correct, the species is close to *C. pubescens*, differing principally in its smaller leaves.

Cinchona coronulata Miq. Journ. Bot. Neerl. 1: 140. 1861.—Described from Peru, but of uncertain status.

Cinchona Delessertiana, Standl., sp. nov.

Ramuli crassi obtuse tetragoni densissime brunneo-pilosi, internodiis elongatis; stipulae late ovali-ovatae 12 mm. longae deciduae

obtusae extus densiuscule hispidulae intus glabrae, erectae; folia mediocria petiolata subcoriacea, petiolo crasso 1-2 cm. longo densissime pilis brunnescentibus hispidulo-tomentoso; lamina ovalis ad rotundato-elliptica 6.5-17 cm. longa 5-8.5 cm. lata apice rotundata vel obtusa et subapiculata, basi truncata vel late rotundata, supra primo sparse adpresso-pilosa cito glabrata nervis nervisque profunde impressis, subtus undique pilis brevibus patentibus brunnescentibus vel flavidis dense hispidula, costa crassa elevata, nervis lateralibus utroque latere circa 14 prominentibus fere rectis, infimis angulo recto superioribus angulo paullo angustiore divergentibus, venulis paucis elevatis laxe reticulatis; inflorescentiae terminales et ex axillis superioribus nascentes densissime multiflorae longe pedunculatae basi foliaceo-bracteatae, floribus dense aggregatis sessilibus, bracteis ultimis linearibus vel lanceolatis 5-8 mm. longis; hypanthium 2.5 mm. longum dense fulvo-tomentosum; calyx 3-3.5 mm. longus dense adpresso-hispidulus, ad medium dentatus, dentibus triangularibus erectis acutis; corolla aperta non visa, in alabastro fere 1 cm. longa dense fulvo-strigosa; capsula immatura anguste lanceolato-oblonga 1.5 cm. longa sparse fulvo-hispidula.

Amazonas: Chachapoyas, *Mathews* (Herb. Delessert, type).

In a genus in which very numerous species have been described, based upon differences of slight importance, a group to which much attention has been given because of its economic importance, it is surprising to discover a form so conspicuously distinct from other species of the genus as this. It is hard to understand why this Mathews collection, made long ago, has not been named, but I can find no mention of it in literature. The species is a well-marked one, characterized by the very dense pubescence of short, spreading hairs that covers all parts of the plant.

Cinchona glandulifera R. & P. Fl. 3: 1. pl. 224. 1802. *C. undulata* Pavón ex Howard, Ill. Nueva Quinol. Pav. 2. pl. 6. 1862.

A shrub 2-4 meters high with 2-4 trunks, these as much as 7 cm. thick; bark ashy gray, the branchlets pilose or hirsute; stipules oblong, obtuse or acutish, villous; leaves short-petiolate, the blades ovate-lanceolate to lanceolate or oblong-elliptic, 8-12 cm. long, acute at each end, glabrous and shining above, hirsute beneath, especially on the nerves, the hairs somewhat glandular at the base; panicles leafy, terminal and axillary, many-flowered, the flowers short-pedicellate; calyx lobes subulate, short, both calyx and hypanthium densely pilosulous; corolla pinkish white, 6-7 mm. long, tomentose outside; capsule oblong, 1.5 cm. long. Neg. 102.

Huánuco: Described from the mountains of Chicoplaya, *Ruiz & Pavón*; photo. and fragm. of authentic material seen ex hb. Berol., also material in hb. Deless. Reported also from Monzón, Panatahuas, and Cochero. "Cascarilla negrilla."

Cinchona govana Miq. Journ. Bot. Neerl. 1: 140. 1861.—The status of this species, described from the Department of Puno, is uncertain.

Cinchona hirsuta R. & P. Fl. 2: 51. pl. 192. 1799. *C. pubescens* var. *hirsuta* DC. Prodr. 4: 353. 1830. *C. pelalba* Pavón ex DC. Bibl. Univ. 41: 152. 1829. *C. pubescens* var. *heterophylla* DC. Prodr. 4: 118. 1830. *C. heterophylla* Pavón ex DC. loc. cit. in syn.

A slender tree 4–5 meters high, the trunks usually several, commonly 15 cm. or less in diameter; leaves on stout petioles, the blades ovate or ovate-elliptic, 6–10 cm. long, obtuse, cuneate to obtuse or rounded at the base, shining above, more or less hirsute beneath; panicles corymbiform, usually rather few-flowered, but sometimes many-flowered, the branches pubescent; calyx deeply lobate, the lobes linear-lanceolate, glabrate; corolla purplish, as much as 2 cm. long, tomentulose; capsules about 3 cm. long (described by Weddell as 10–14 cm., probably in error), ovoid-oblong, Negs. 91, 94, 95, 98.

Huánuco: Described from the mountains near Pillao and Acomayo, *Ruiz & Pavón*; authentic material seen in hb. Deless., also photo. and fragm. ex hb. Berol. Authentic material of *C. pelalba* and *C. heterophylla* represented in hb. Field Mus. by photos. and fragm. ex hb. Berol. "Cascarilla delgada," "cascarilla delgadilla."

Cinchona Humboldtiana Lamb. Ill. Cinch. 7. 1821. *C. villosa* Pavón ex Lamb. loc. cit. in syn. *C. conglomerata* Pavón ex Howard, Ill. Nueva Quinol. Pav. pl. 15. 1862. *C. Humboldtiana* var. *conglomerata* Wedd. Ann. Sci. Nat. V. 12: 45. 1869.

Branchlets pilose or hirsute; leaves short-petiolate, the blades rather thin, elliptic to lance-oblong, 8–13 cm. long or larger, acute or acutish at each end, glabrate above, long-hirsute beneath; panicles mostly small and rather dense, pilose; calyx small, shallowly lobate, the lobes broadly triangular, acute, the hypanthium densely tomentose; corolla 1 cm. long; capsule ovate or oblong, 1.5–2.5 cm. long, tomentose-pilose or glabrate. Negs. 101, 105.

Cajamarca: Type from Jaén, *Pavón*; photo. of authentic specimen seen, ex hb. Berol. Also in Bolivia, and perhaps in Ecuador. "Cascarilla colorada."

In the herbarium of Field Museum there is a photograph of a specimen in hb. Berol, "*Kunth 23*," from Jauja, Junín, labeled *Cinchona purpurascens* Wedd., that may be referable to this species.

Cinchona legitima Ruiz ex Lamb. Bull. de Pharm. 293. 1810.
—Described from Peru; a species of uncertain position.

Cinchona micrantha R. & P. Fl. 2: 52. pl. 194. 1799. *C. affinis* Wedd. Ann. Sci. Nat. III. 10: 8. 1848. *C. micrantha* var. *rotundifolia* Wedd. Ann. Sci. Nat. III. 11: 270. 1849. *C. micrantha* var. *oblongifolia* Wedd. loc. cit. *C. Reicheliana* Howard, Nueva Quinol. Pav. pl. 5. 1862. *C. micrantha* var. *huanucensis*, *C. micrantha* var. *affinis*, *C. micrantha* var. *Reicheliana*, *C. micrantha* var. *calisayoides* Howard, op. cit. 1862. *C. Pavoniana* Kuntze, Monogr. Cinch. 29. 1878.

A medium-sized tree, the branchlets sericeous or glabrate; stipules ovate, obtuse, glabrous; leaves petiolate, large, oval to obovate, rounded, or elliptic, obtuse to rounded at the apex, acute to rounded at the base, nearly glabrous but usually pilose beneath along the costa; panicles large and many-flowered, rather open, puberulent or tomentulose, often leafy; hypanthium minutely tomentulose; calyx minute, the teeth acute, purplish; corolla pink, about 6 mm. long, densely tomentulose, the lobes much shorter than the tube; capsule oblong, acute, about 1.5 cm. long. Negs. 108, 109.

Huánuco: Type from San Antonio de Playa Grande, *Tafalla*; photo. and fragm. of authentic material seen, ex hb. Berol. Type of *C. Reicheliana* from the region of Huánuco. Cochero, *Poeppig 1339, 1737, 1708*.—Cajamarca: Valley of Río Tabaconas, 1,200 meters, *Weberbauer 6271*.—Junín: La Merced, 1,000 meters, *Weberbauer 1843*. San Ramón, 900–1,300 meters, edge of woods, *Killip & Smith 24767*.—San Martín: Zepelacio, 1,100 meters, *Klug 3650*.—Without locality: *Mathews 1953*; *Poeppig 3047, 1707, 2834*. Reported by Weddell from Carabaya, Department of Puno. The type of *C. affinis* is from Peru. Also in Bolivia and Ecuador. "Cascarilla provinciana," "cascarilla provinciana blanquilla," "cascarilla provinciana negrilla," "motosolo." "Quepo cascarilla," "cascarilla verde" (Bolivia).

Weddell states that immediately after the bark is removed from the tree it assumes a blood-red color, and that it is exceedingly bitter. This species was formerly a more or less important source of the drug cinchona.

Cinchona officinalis L. Sp. Pl. 172. 1753. *C. lancifolia* Mutis, "Periódico de Santa Fe," 465. 1793. *C. nitida* R. & P. Fl. 2: 50. pl. 191. 1799 (type from Pampamarca, Chacahuassi, Casape, Casapillo, Cayumba, Sapan, Cochero, Ruiz & Pavón; authentic material seen ex hb. Berol. and hb. Deless.). *C. lanceolata* R. & P. Fl. 2: 51. 1799 (described from Muña, Panao, Pillao, Cochero, Ruiz & Pavón; authentic material seen, ex hb. Berol. and hb. Deless.); 3: 1. pl. 223. 1802. *C. angustifolia* Ruiz, Quinol. Suppl. 14. 1801. *C. Condaminea* H. & B. Pl. Aequin. 1: 33. pl. 10. 1808. *C. colorata* Lamb. Bull. de Pharm. 294. 1810. *C. Condaminea* var. *lanceolata* Lamb. Ill. Cinch. 2. 1821. *C. stupea* Pavón ex Lamb. loc. cit. in syn. 1821; Lindl. Fl. Med. 416. 1838. *C. lancifolia* var. *nitida* R. & S. Syst. Veg. 5: 9. 1825. *C. lancifolia* var. *lanceolata* R. & S. loc. cit. *C. macrocalyx* DC. Bibl. Univ. 41: 150. 1829 (authentic material seen, ex hb. Deless.). *C. coccinea* Pavón ex DC. Prodr. 4: 353. 1830, in syn. (authentic material seen, ex hb. Deless.). *C. macrocalyx* var. *obtusifolia* DC. loc. cit. *C. obtusifolia* Pavón ex DC. loc. cit. in syn. (authentic material seen, ex hb. Deless.). *C. macrocalyx* var. *lucumifolia* DC. loc. cit. *C. lucumifolia* Pavón ex DC. loc. cit. in syn. (authentic material seen, ex hb. Deless.). *C. macrocalyx* var. *Uritusinga* DC. loc. cit. *C. Uritusinga* Pavón ex DC. loc. cit. in syn. *C. Bonplandiana* Klotzsch in Hayne, Arzneigew. 7: pl. 37. 1846 (photo. of authentic material seen, ex hb. Berol.). *C. Calisaya* Wedd. Ann. Sci. Nat. III. 10: 6. 1848. *C. amygdalifolia* Wedd. loc. cit. (described from Bolivia and Peru). *C. boliviana* Wedd. op. cit. 7. 1848. *C. Calisaya* var. *Josephiana* Wedd. Ann. Sci. Nat. III. 11: 269. 1849. *C. Condaminea* var. *lanceolata* Wedd. loc. cit. *C. crispa* Tafalla ex Howard, Nueva Quinol. Pav. pl. 2. 1862. *C. Palton* Pavón ex Howard, op. cit. pl. 13. 1862. *C. parabolica* Pavón ex Howard, op. cit. pl. 16. 1862. *C. violacea*, *C. suberosa* Pavón ex Howard, loc. cit. 1862. *C. officinalis* var. *Uritusinga* Howard, Rept. Internat. Bot. Congr. 201. 1866. (?) *C. euneura* Miq. Ann. Mus. Bot. Lugd. Bat. 4: 265. 1868-69 (type from Río Grande, Carabaya, Department of Puno, Hasskarl). *C. lucumifolia* var. *stupea* Wedd. Ann. Sci. Nat. V. 11: 358. 1869. *C. Calisaya* var. *boliviana* Wedd. Ann. Sci. Nat. V. 12: 55. 1869. *C. elliptica* Wedd. op. cit. 60. 1869 (type from Province of Carabaya, Department of Puno). *C. Weddelliana* Kuntze, Monogr. Cinch. 29. 1878. *Hindsia subandina* Krause, Bot. Jahrb. 40: 431. 1908, nomen.

A large or medium-sized tree or sometimes only a shrub, the trunk rarely as much as 1.5 meters in diameter, the bark rugose,

fuscous, the branchlets strigillose-pilosulous; stipules lanceolate or oblong, acute or obtuse, glabrous; leaves petiolate, lanceolate to elliptic or ovate, small, acute, acuminate, or obtuse, at the base rounded to attenuate, coriaceous, glabrous above and often lustrous, glabrous beneath or puberulent or short-pilose, especially on the veins, usually about 10 cm. long and 3.5-4 cm. wide, often scrobiculate beneath; panicles terminal, leafy, rather small and dense, many-flowered; hypanthium strigose; calyx glabrous or nearly so, reddish, the teeth triangular, acute; corolla pink or red, sericeous, the lobes ovate, acute, the tube about 1 cm. long; capsule oblong, commonly 1.5-2 cm. long, glabrate. Negs. 96, 110, 112, 114-121, 572.

Amazonas: Reported from Chachapoyas.—Huánuco: Pampayacu, *Kanehira* 352. Pan de Azúcar, *Sawada* 69, 72.—Junín: Jaén, *Rivera* 588.—Loreto: Canela Ucsha, 1,000 meters, *Ule* 6767 (type of *Hindsia subandina*).—Puno: Reported from the Sandía Valley.—San Martín: Monte Campana near Tarapoto, *Spruce* 4832 (det. doubtful). Reported to grow at 1,600-2,700 meters. Ranging from Bolivia to Colombia. "Cascarilla verde," "cascarilla verde morada," "cascarilla crespilla," "cascarilla calisaya," "ichu cascarilla."

This species was formerly an important source of cinchona bark in the Andean region, and it was also the one first used in medicine. It was first made known from the region of Loja, in southern Ecuador. The species as treated here is a variable one, at least as regards leaf form, but no clear lines can be drawn to separate the forms into groups. It may well be, however, that with ample material available for study, if it ever can be brought together, there may be found some means of distinguishing several species in the material now referred to *C. officinalis*.

Cinchona pubescens Vahl, Skrivt. Naturh. Selsk. 1: 19. 1790. *C. Morado* Ruiz, Quinol. 67. 1792. *C. purpurea* R. & P. Fl. 2: 52. pl. 193. 1799 (type from Pati, *Ruiz & Pavón*; authentic material seen, ex hb. Berol. and hb. Deless., from Chinchao, Pillao, etc.). *C. ovata* R. & P. op. cit. 52. pl. 195. 1799 (described from Posuso and Pano; authentic material seen, ex hb. Berol.). *C. grandifolia* Mutis ex Humb. Ges. Naturf. Freund. Berlin Mag. 1: 117. 1807. *C. scrobiculata* H. & B. Pl. Aequin. 1: 165. pl. 47. 1808 (type from Jaén, Department of Junín, *Humboldt & Bonpland*; type material seen in hb. Deless.). *C. rotundifolia* Pavón ex Lamb. Ill. Cinch. 5. 1821. *C. pubescens* var. *ovata* DC. Prodr. 4: 353. 1830. *C. pallescens* Ruiz ex DC. loc. cit. in syn. *C. tenuis* Ruiz ex DC. loc. cit. in syn. *C. dis-*

color Hayne, *Arzneigew.* 14: sub *pl.* 14. 1846. *C. Delondriana* Wedd. *Ann. Sci. Nat.* III. 10: 7. 1848 (type from Peru). *C. rufinervis* Wedd. op. cit. 8. 1848 (type from Peru). *C. Pelletieriana* Wedd. loc. cit. 1848 (described from Bolivia and Peru). (?) *C. purpurascens* Wedd. loc. cit. 1848 (described from Bolivia and Peru). *C. scrobiculata* var. *genuina* Wedd. *Ann. Sci. Nat.* III. 11: 270. 1849. *C. scrobiculata* var. *Delondriana* Wedd. loc. cit. 1849. *C. pubescens* var. *purpurea* Wedd. loc. cit. 1849. *C. ovata* var. *vulgaris* Wedd. loc. cit. 1849. *C. ovata* var. *erythroderma* Wedd. loc. cit. 1849, nomen nudum. *C. Lechleriana* Schlecht. *Linnaea* 26: 728. 1853–55 (type from Sangabán, Department of Puno, *Lechler 2347*; type material seen in hb. Deless.). *C. succirubra* Pavón ex Klotzsch, *Abh. Akad. Berl.* 1857: 60. 1858 (type material (?) seen in hb. Berol., from Tucora in the hills of San Antonio). *C. lutea* Pavón ex Howard, *Nueva Quinol. Pav. pl.* 14. 1862. *C. obovata* Pavón ex Howard, op. cit. *pl.* 18. 1862 (type from region of Huánuco, *Pavón*). *C. decurrentifolia* Pavón ex Howard, op. cit. *pl.* 23. 1862. *C. peruviana* Howard, op. cit. *pl.* 27. 1862 (type from Cochero). *C. subcordata* Pavón ex Howard, loc. cit. 1862. *C. viridiflora* Pavón ex Howard, loc. cit. 1862. *C. subsessilis* Miq. *Ann. Mus. Bot. Lugd. Bat.* 4: 272. 1868–69 (type from Peru, *Hasskarl*). *C. caloptera* Miq. op. cit. 273. 1868–69 (grown in Java from Peruvian seed). *C. erythroderma* Wedd. *Ann. Sci. Nat.* V. 11: 362. 1869 (type from Río Vilcomayo north of Cuzco). *C. platyphylla* Wedd. loc. cit. 1869. *C. elliptica* Wedd. *Ann. Sci. Nat.* V. 12: 60. 1869. *C. Howardiana* Kuntze, *Monogr. Cinch.* 30. 1878.

A medium-sized tree, the trunk about 30 cm. in diameter, the branchlets pubescent; stipules large, ovate, obtuse or acute, sericeous or almost glabrous; leaves slender-petiolate, the blades usually large, commonly broadly ovate to orbicular, rounded to acute at the apex, cordate to acute at the base and often decurrent, usually glabrate above, beneath densely short-pilose or tomentose to glabrate, often scrobiculate; panicles usually large, often leafy, many-flowered, open, the flowers subsessile; hypanthium densely sericeous; calyx appressed-pilosulous, the teeth short and broad, acute; corolla red or pink, sericeous, 10–12 mm. long, the lobes half as long as the tube; capsule lanceolate or oblong, glabrate, commonly 1.5–2.5 cm. long. Negs. 93, 103, 106, 107, 571, 22802.

Cajamarca: Huambos, 2,400 meters, *Weberbauer 4202, 4195*.—Cuzco: San Miguel, Urubamba Valley, 1,800 meters, *Cook & Gilbert 1173, 1781*. Torontoy, 2,400 meters, *Cook & Gilbert 1099*.—Huánuco: Pan de Azúcar, *Sawada 75*. Río Posuso, 2,300 meters, *Weberbauer*

6782. Casapí, *Mathews* 1952.—Junín: Jaén, *Bonpland*. Chanchamayo Valley, 1,600 meters, *Schunke* 1490, 546.—Puno: Mountains near Sangabán, *Lechler* 2347. Province of Carabaya, *Weddell* 4358. Bolivia to Colombia. "Cascarilla," "cascarilla boba," "cascarilla delgada," "cascarilla pata de gallinazo," "cascarilla fina," "cascarilla morada," "cascarilla pata de gallareta," "palo blanco," "quina de Chito y Ynta," "quina blanca," "cascarilla colorada," "cascarilla de Santa Ana," "quina amarilla," "carua-carua," "cargua-cargua," "cascarilla mula," "cascarilla zamba morada," "cascarilla de Carabaya."

This species is almost as variable as *C. officinalis*. It is and has been one of the most important sources of the cinchona bark employed in medicine, if not the principal one.

Cinchona umbellulifera Pavón ex Howard, Ill. Nueva Quinol. Pav. *pl.* 22. 1862.—Described from Peru, the type collected by Pavón. I have seen no material of the species, whose status is uncertain.

7. JOOSIA Karst.

Trees with bitter bark; stipules caducous; leaves opposite, petiolate, herbaceous; inflorescence cymose or verticillate-umbellate, the flowers white, 5-parted; calyx large, 5-dentate, in bud open or subvalvate; corolla salverform, deeply lobed, each lobe provided with 2 petaloid, crispate appendages, the tube glabrous within; stamens inserted in the tube, the filaments short, the anthers linear; capsule linear, bisulcate, 2-celled; seeds numerous, imbricate, winged.—The genus consists only of the three species listed here.

Capsule valves 1.5–2.5 cm. long, not spirally twisted after dehiscence.

J. Dielsiana.

Capsule valves 3.5–6.5 cm. long, spirally twisted after dehiscence.

Leaves glabrous on the upper surface; inflorescence cymose-umbellate; capsule appressed-pilose. *J. umbellifera*.

Leaves appressed-pilose on the upper surface; inflorescence strictly dichotomous; capsule glabrous. *J. dichotoma*.

Joosia dichotoma (R. & P.) Karst. Fl. Columb. 1: 9. 1858. *Cinchona dichotoma* R. & P. Fl. 2: 53. *pl.* 197. 1799. *Ladenbergia dichotoma* Klotzsch in Hayne, *Arzneigew.* 14: sub *pl.* 15. 1846. *Cosmibuena dichotoma* G. Don, *Hist. Dichl. Pl.* 3: 479. 1834.

A nearly glabrous shrub or tree 2–8 meters high; stipules oblong-ovate, obtuse, longer than the petioles, caducous; leaves short-

petiolate, oblong-lanceolate to elliptic, acute, at the base acute or obtuse, sericeous-pilose beneath; inflorescence rather few-flowered, the flowers secund, short-pedicellate; corolla about 17 mm. long, with a slender tube. Neg. 6641.

Huánuco: Type from Chicoplaya, *Tafalla* in 1797.—Loreto: Pampas de Ponasa, 1,200 meters, *Ule* 6795.

Joosia Dielsiana Standl. Field Mus. Bot. 11: 219. 1936.

A tree 6 meters high, the trunk 12 cm. in diameter; stipules narrowly oblong, 1 cm. long, obtuse, glabrate, deciduous; leaves 9–18 cm. long, petiolate, elliptic-oblong or narrowly elliptic, acutely acuminate, acute at the base, glabrous above, at first laxly appressed-pilose beneath, soon glabrate; inflorescence long-pedunculate, rather laxly few-flowered; corolla densely appressed-pilose, the slender tube greenish yellow, 11–12 mm. long, the lobes of equal length; capsule oblong, subterete, glabrate.

Loreto: Upper Marañón, mouth of Río Santiago, in upland forest, 160 meters, *Tessmann* 4478, type.

The fruit is so unlike that of the other species that the tree might be considered worthy of generic segregation, but the curious corolla is very similar to that of the other species, and quite unlike the corolla of any other genus of the family.

Joosia umbellifera Karst. Fl. Columb. 1: 9. *pl.* 5. 1858; Schum. in Mart. Fl. Bras. 6, pt. 6: 159. *pl.* 100. 1889.

A medium-sized tree; stipules linear-oblong, acute or subobtuse, 1.5 cm. long; leaves short-petiolate, oblong to obovate-oblong or oblong-lanceolate, 10–22 cm. long, long-acuminate, acute to rounded at the base, appressed-pilose beneath on the veins; inflorescence 15 cm. long; calyx lobes triangular-ovate, acute; corolla subsericeous, 12–14 mm. long, the lobes ovate, each bearing at the apex 2 large, oval appendages; capsule 3.5–6.5 cm. long, 3 mm. wide.

San Martín: Reported by Schumann from Tarapoto, *Spruce* 3944.—Loreto: Balsapuerto, 220 meters, *Klug* 2943. Also in Colombia.

The plant is described as a shrub of 2–3 meters or as a tree of 7–11 meters. The flowers are pure white and sweet-scented.

8. MACROCNUM L.

Shrubs or trees; stipules usually caducous; leaves opposite, petiolate; inflorescences axillary, often leafy, paniculate, the flowers

usually showy, 5-parted; calyx persistent, short or elongate, 5-dentate or lobate; corolla salverform or funnelform, the lobes valvate in bud, the tube pilose at the insertion of the stamens; stamens unequal, attached to the middle of the tube, exserted; capsule 2-celled, oblong or cylindric, bisulcate, loculicidal; seeds numerous, minute, compressed, narrowly winged.

Leaves glabrous beneath but barbellate in the axils of the nerves, sometimes minutely appressed-pilose when young, but soon glabrate. *M. roseum*.

Leaves more or less densely pilose beneath with short, spreading hairs.

Calyx lobes obtuse. *M. cinchonoides*.

Calyx lobes acute. *M. pilosinervium*.

Macrocnemum cinchonoides Wedd. Ann. Sci. Nat. IV. 1: 76. 1854. *Lasionema cinchonoides* Wedd. Hist. Quinqu. 99. 1849.

Leaves short-petiolate, the blades obovate or oblanceolate-oblong, acute, narrowed to the base, glabrous above, short-pilose beneath, the veins glabrate; calyx lobes short, obtuse; branches of the panicle densely rusty-pilose; capsule linear-clavate, arcuate, 1.5-2 cm. long. "Cascarilla bruta." Neg. 183.

Puno: Humid forests, Tambopata, Province of Carabaya, Weddell 4349, type material.

Probably both this and *M. pilosinervium* are only variants of *M. roseum*, and not worthy of specific rank.

Macrocnemum pilosinervium Standl. Field Mus. Bot. 4: 326. 1929.

Branchlets densely appressed-pilose; leaves short-petiolate, the blades obovate or oblong-obovate, 15-22 cm. long, acute, acute at the base or attenuate, glabrous above, densely spreading-pilose beneath and with dense, subappressed hairs along the veins; inflorescences long-pedunculate, densely many-flowered, the branches appressed-pilosulous; corolla glabrous, the tube 1 cm. long, the rounded lobes 2-2.5 mm. long; immature capsule 8 mm. long.

Type from Peru, without locality, Mathews in 1862.

Macrocnemum roseum (R. & P.) Wedd. Ann. Sci. Nat. IV. 1: 76. 1854. *Cinchona rosea* R. & P. Fl. 2: 54. pl. 199. 1799. *C. fusca* Ruiz ex Vitm. Summa Suppl. 1: 262. 1802. *Lasionema roseum* Don, Edinb. Phil. Mag. 2: 377. 1833. *C. Tarantaron* Pav. ex Wedd.

Hist. Quinquin. 64. 1840, in syn. *M. Sprucei* Rusby, Mem. Torrey Club 6: 44. 1896.

A shrub or tree, as much as 15 meters high and probably larger, nearly glabrous; leaves petiolate, the blades obovate to oblong, obtuse, cuneately narrowed to the base, firm, mostly 6-15 cm. long and 3-7 cm. wide; inflorescence rusty-pilosulous or sometimes glabrate; corolla pink, glabrous outside, about 12 mm. long; capsule 1.5-2 cm. long. Negs. 185, 564, 6643.

Amazonas: Mouth of Río Santiago, *Tessmann* 3509. Marañón Valley, *Tessmann* 3835.—Huánuco: Described from Posuso and San Antonio de Playa (type material seen). Posuso, 600 meters, *Macbride* 4588. Pampayacu, *Sawada* 15. Río Posuso, *Weberbauer* 6751.—Loreto: Lower Río Huallaga, 200 meters, *Williams* 4957. Cahipuerto, 250 meters, *Klug* 3123. Puerto Arturo, 135 meters, dense forest, *Killip & Smith* 27898. Pumayacu, 600-1,200 meters, *Klug* 3202.—Madre de Dios(?): Seringal San Francisco, Río Acre, *Ule* 9862.—San Martín: Tarapoto, *Williams* 5468; *Spruce* 3972. Campana, near Tarapoto, *Spruce* 4367. Pongo de Cainarachi, 230 meters, *Klug* 2631. Juan Jui, Alto Río Huallaga, 400 meters, *Klug* 3788.—Without locality, Pavón. Also in Bolivia and Brazil.

"Palo de San Juan," "asmonich," "cascarillo pardo." Ruiz and Pavón state that the flowers were used for decoration in the churches.

9. REMIJIA DC.

Shrubs or trees; stipules binate or quaternate; leaves opposite or verticillate, petiolate, usually coriaceous; inflorescence axillary, paniculate, with opposite branches, 5-parted; calyx dentate or lobate; corolla salverform, the tube glabrous within, the lobes mostly coriaceous, glabrous on the margins, valvate in bud; stamens inserted on the tube, included or subexserted, the anthers linear; capsule 2-celled, loculicidal, the valves woody, bifid; seeds peltately attached, winged.

Capsules 8-10 mm. long; leaf blades attenuate to the narrow base; hypanthium glabrous or nearly so. *R. megistocaula*.

Capsules 12-15 mm. long; leaf blades merely acute at the base or often obtuse; hypanthium densely appressed-pilose.

R. peruviana.

Remijia megistocaula Krause, Bot. Jahrb. 40: 319. 1908.

A tree up to 30 meters high, the branchlets puberulent; stipules 3-3.5 cm. long, ovate, acuminate, glabrate, soon deciduous; leaves

short-petiolate or almost sessile, the blades coriaceous, lanceolate to obovate-lanceolate, 25–40 cm. long, 12–16 cm. wide, or sometimes smaller, glabrate, short-acuminate; inflorescences large and many-flowered, ferruginous-pilose; capsule narrowly pyriform, glabrous. Negs. 161, 162.

Huánuco: Between Monzón and Río Huallaga, 700 meters, *Weberbauer 3687*, type collection.

Remijia peruviana Standl. Field Mus. Bot. 8: 156. 1930.

A shrub or tree as much as 10 meters high; stipules deciduous, oval or oblong, obtuse or rounded at the apex; leaves opposite, short-petiolate, the blades coriaceous, elliptic or broadly ovate, 8–17 cm. long, 4–9 cm. wide, acute, beneath minutely appressed-pilosulous, especially on the veins, or glabrate; panicles long-pedunculate, many-flowered, about equaling the leaves, densely fulvous-pilosulous; calyx lobes ovate or lanceolate, acute; corolla white, densely fulvous-sericeous, the tube 8–11 mm. long, the attenuate lobes 5–6 mm. long; capsule narrowly oblong, sparsely appressed-pilosulous. “Cascarilla,” “asar lisa,” “collar lisa.” “Quina” (Colombia).

Loreto: Balsapuerto, 220 meters, *Klug 3072*. Near Marana, vicinity of Iquitos, *Williams 1512* (type), 1511. Forest between Nanay and Napo rivers, *Williams 675*. Punchana, *Williams 1333*, 8022. San Juan, in forest, *Williams 3738*. Morona-cocha, 115 meters, *Meria 6512a*. Palta-cocha, Alto Nanay, *Williams 3190*. Nauta, Río Ucayali, *Spruce 3857*. Mishuyacu, 100 meters, *Klug 1340*, 1203. Iquitos, *Tessmann 3661*, 5095; *Killip & Smith 26973*, 27296. Río Nanay, *Williams 340*.—San Martín: Tarapoto, *Spruce 4581*, 4263; *Williams 6107*, 6670, 6322. Also in Colombia.

10. PIMENTELIA Wedd.

Trees; stipules free, covered at the base with resin; leaves opposite, short-petiolate, subcoriaceous; inflorescence axillary, paniculate, small, the flowers sessile; hypanthium turbinate, puberulent; calyx short, persistent; the teeth triangular; capsule linear-oblong, short, 2-celled, septicidally dehiscent from apex to base, the valves entire; seeds numerous, minute, linear-lanceolate, winged.

The genus was named for Don Pablo Pimentel, once governor of the Province of Carabaya. It consists of a single species.

Pimentella glomerata Wedd. Monogr. Cinchon. 94. pl. 27, B. 1849.

A tree 5-6 meters high, the trunk 20-30 cm. in diameter, the branchlets glabrous, resinous; stipules ovate, obtuse, glabrous; leaf blades oblong-obovate, 20-25 cm. long, 10-13 cm. wide, rounded to short-acuminate, acute at the base, pilosulous beneath in the axils of the nerves, otherwise glabrous; panicles opposite, rounded, many-flowered, the short branches glabrate; capsule 1 cm. long, 3 mm. wide, glabrate. Neg. 160.

Puno: Type collected in the mountains of Carabaya, growing with various species of *Cinchona* and *Ladenbergia*, Weddell; photo. seen of specimen in hb. Berol. "Ueno-ueno," "beno-beno."

11. LADENBERGIA Klotzsch

Shrubs or small trees, pubescent or almost glabrous; stipules free or united, caducous; leaves opposite, petiolate, small or large, often coriaceous; flowers large or medium-sized, disposed in terminal panicles, these leafless and with opposite branches; calyx commonly 5-dentate or 5-lobate; corolla salverform, pilose, the lobes valvate, short-papillose on the margins or over the inner surface; stamens included, the anthers linear; capsule usually cylindric, dehiscent from the apex, woody or coriaceous; seeds broadly winged.

The species of this genus, closely related to *Cinchona*, are almost as difficult of discrimination as in the latter. Since they are of little economic importance, less attention has been given to them by botanists and pharmacists, and their synonymy is, therefore, far less involved.

Corolla 7-10 mm. long; capsule 1-2 cm. long. Leaves acuminate, pilose beneath in the axils of the nerves, otherwise glabrous or nearly so. *L. pedunculata*.

Corolla 1.8-5.5 cm. long; capsules usually larger.

Leaves conspicuously bullate, oblanceolate-oblong, short-hispid beneath on the veins. Capsules about 4.5 cm. long. *L. bullata*.

Leaves not bullate, not short-hispid beneath, usually broadest at or below the middle.

Calyx 7 mm. wide or more in anthesis; corolla tube very thick and broad; stipules connate into a cap. Leaf blades acute at the base, densely pubescent beneath. *L. crassifolia*.

Calyx much narrower; corolla tube slender; stipules free or nearly so.

Leaves densely pubescent or tomentose beneath, the pubescence persistent.

Leaf blades acute at the base, oblong or obovate-oblong.

L. Riveroana.

Leaf blades rounded or subcordate at the base, broadly oval to elliptic or rounded.

Lobes of the corolla almost equaling the tube, the corolla less than 2 cm. long *L. gavanensis.*

Lobes of the corolla much shorter than the tube, the corolla more than 3 cm. long.

Corolla 3.5 cm. long *L. malacophylla.*

Corolla 4.5–5 cm. long *L. Carua.*

Leaves glabrous or glabrate beneath except sometimes on the veins, the pubescence, if any, chiefly deciduous.

Calyx repand-dentate or shallowly lobate, the lobes shorter than the tube.

Leaves glabrous, paler beneath, 2–4.5 cm. wide.

L. discolor.

Leaves pubescent beneath on the veins, broader.

L. ferruginea.

Calyx deeply lobate, usually to below the middle.

Calyx lobes rounded-ovate, obtuse . . . *L. heterophylla.*

Calyx lobes ovate or lanceolate, acuminate to acutish.

Hypanthium glabrous. Leaf blades 5–6.5 cm. long, rounded-obovate, glabrous *L. coriacea.*

Hypanthium densely pilose or sericeous.

Corolla 2 cm. long or less.

Leaf blades oblong-lanceolate, acute at the base.

L. stenocarpa.

Leaf blades chiefly elliptic or ovate and obtuse to rounded at the base *L. magnifolia.*

Corolla 3–3.5 cm. long.

Leaf blades rounded at the base; pubescence of the hypanthium spreading . . . *L. acutifolia.*

Leaf blades acute or obtuse at the base; pubescence of the hypanthium appressed . *L. graciliflora.*

Ladenbergia acutifolia (R. & P.) Klotzsch in Hayne, *Arznei-gew.* 14: sub *pl.* 15. 1846. *Cinchona acutifolia* R. & P. *Fl.* 3: 1. *pl.* 225. 1802. *Cascarilla acutifolia* Wedd. *Ann. Sci. Nat.* III. 10: 11. 1848. *Buena acutifolia* Wedd. *Journ. Linn. Soc.* 11: 186. 1869.

A shrub or tree 3-7 meters high, the branches glabrate; stipules ovate, acute; leaves petiolate, the blades ovate-lanceolate to lance-oblong, sometimes 20 cm. long, acute or acuminate, rounded at the base, coriaceous, glabrous and shining above, pilosulous beneath on the veins; inflorescence long-pedunculate, small, many-flowered, the branches tomentulose, the flowers subsessile; calyx lobes lanceolate; corolla white, 3 cm. long, the lobes shorter than the tube; capsule oblanceolate, about 3 cm. long, pubescent. Negs. 136, 6642.

Huánuco: Type from Chicoplaya, *Ruiz & Pavón*; authentic specimen seen in hb. Deless., and photos. ex hb. Berol. "Cascarilla."

Ladenbergia bullata (Wedd.) Standl. Trop. Woods 34: 41. 1933. *Cascarilla bullata* Wedd. Ann. Sci. Nat. III. 10: 11. 1848. *Buena bullata* Wedd. Journ. Linn. Soc. 11: 187. 1869.

A shrub or tree 3-5 meters high, the branchlets glabrate; stipules oblong; leaves short-petiolate, the blades oblanceolate-oblong, 15-20 cm. long, 4-8 cm. wide, acute or acutish at each end, conspicuously bullate, almost glabrous, coriaceous, shining above; panicle few-flowered, corymbose, the branches ferruginous-pilose; calyx lobes lanceolate; capsule oblong, 4-8 cm. long, 6-10 mm. wide, glabrate. Negs. 127, 25714.

Puno: Described from the valleys of Tambopata and San Juan del Oro, at 2,000-2,500 meters, *Weddell*; authentic material seen in hb. Deless. Between Yuncacoya and Ramospata, *Raimondi 10068*. "Cargua-cargua," "cargua-cargua chica."

Ladenbergia Carua (Wedd.) Standl. Field Mus. Bot. 7: 274. 1931. *Cascarilla Carua* Wedd. Ann. Sci. Nat. III. 10: 12. 1848. *Cinchona Carua* Miq. Ann. Mus. Bot. Lugd. Bat. 4: 275. 1868-69. *Buena Carua* Wedd. Journ. Linn. Soc. 11: 187. 1869.

A tree, the branchlets ferruginous-tomentose; stipules large, obtuse or rounded, tomentose; leaves short-petiolate, the blades oblong or oval, very large, 30-40 cm. long and more, obtuse or acute, cordate or rounded at the base, pubescent or glabrate above, ferruginous-tomentose beneath; panicles large, rather few-flowered, the white flowers very fragrant; calyx teeth short, triangular; corolla densely sericeous, 4.5-5 cm. long, the lobes more than half as long as the tube; capsule 3.5-5 cm. long, tomentose.

Reported by *Weddell* from the departments of Cuzco and Puno (Province of Carabaya). Also in Bolivia. "Cargua-cargua," "cargua-cargua grande." "Carua," "cascarilla de mula" (Bolivia).

Ladenbergia coriacea Krause, Bot. Jahrb. 40: 318. 1908.

A shrub or small tree 4 meters high; stipules triangular, acute, 4–6 mm. long; leaves short-petiolate, stiff-coriaceous, the blades rounded-obovate or broadly elliptic, 5–6 cm. long, 3–3.5 cm. wide, obtuse to rounded and apiculate at the apex, acutish to rounded at the base, glabrous; panicles many-flowered, rather dense; hypanthium glabrous, the triangular calyx lobes acute; corolla puberulent, the tube 15–18 mm. long, the lobes oblong, 8–10 mm. long; capsule rather broadly oblong, 15–18 mm. long, glabrous. Neg. 128.

Amazonas: Molinopampa east of Chachapoyas, 2,000–2,300 meters, *Weberbauer 4331*, type; photo. and fragm. seen, ex hb. Berol. Chachapoyas, *Mathews*.

Ladenbergia crassifolia (Pavón) Standl. Field Mus. Bot. 7: 200. 1931. *Cinchona crassifolia* Pavón ex DC. Bibl. Univ. 41: 150. 1829; Prodr. 4: 354. 1830. *Cascarilla calyptrata* Wedd. Ann. Sci. Nat. III. 10: 13. 1848. *Buena crassifolia* Wedd. Journ. Linn. Soc. 11: 187. 1869.

A tree, the branchlets densely ferruginous-tomentose; stipules connate into a cap that encloses the buds; leaves petiolate, the blades coriaceous, oblong to narrowly elliptic, mostly 15–20 cm. long, acutish, attenuate to the base, glabrous and lustrous above, densely puberulent beneath; panicles corymbiform, few-flowered, the branches ferruginous-tomentose; calyx short, the broadly triangular lobes acute or obtuse; corolla tube thick, densely sericeous, 2.5 cm. long, the narrow lobes slightly shorter; capsules 4–7 cm. long, 1 cm. broad, becoming glabrate. Neg. 25716.

Junín: Chanchamayo Valley, 1,500 meters, *Schunke 297*.—Without locality, *Pavón*. Also in southern Ecuador, where it was first collected by Ruiz and Pavón in the region of Loja.

The Peruvian plant has been confused with the closely related *L. macrocarpa* (Vahl) Klotzsch, and the latter has been reported from Peru, apparently in error, the collections so reported being really from southern Ecuador.

Ladenbergia discolor Schum. in Mart. Fl. Bras. 6, pt. 6: 146. 1889.

A shrub 1–4 meters high, the branchlets at first ferruginous-tomentulose, soon glabrate; leaves short-petiolate, coriaceous, the blades oblong or ovate-oblong, 7–10 cm. long, 2–4.5 cm. wide, acute or subobtuse at each end, lustrous, glabrous, paler beneath; inflores-

cence dense, 4–5 cm. long, the branches pilosulous, the flowers subsessile; calyx repand-dentate or undulate; corolla white, sericeous, 18 mm. long, the lobes half as long as the tube, linear, acute. Neg. 140.

Loreto: Canela Ucsha, 1,000 meters, *Ule* 6767.—San Martín: Near Tarapoto, *Spruce* 4247, type collection. Between Tarapoto and Chasuta, *Raimondi* 1195.

Ladenbergia ferruginea Standl. Field Mus. Bot. 8: 336. 1931.

A shrub 4 meters high, the branchlets densely ferruginous-hispidulous; leaves slender-petiolate, subcoriaceous, the blades oblong-elliptic or lance-oblong, 14–25 cm. long, 5.5–9 cm. wide, acute or short-acuminate, narrowed to the acute base, ferruginous-pilose beneath on the veins; panicles dense and many-flowered, the branches ferruginous-tomentose, the flowers pedicellate; calyx 3.5 mm. long, sparsely pilose, the teeth triangular, acute or apiculate; corolla white, appressed-pilose, the tube 10–12 mm. long, the lobes 6–7 mm. long.

Puno: Chunchusmayo, in forest near the river, 900 meters, *Weberbauer* 1175, type.

Ladenbergia gavanensis (Schlecht.) Standl., comb. nov. *Cascarilla gavanensis* Schlecht. Linnaea 26: 730. 1854.

Leaves petiolate, subcoriaceous, the blades rounded-oval, 25 cm. long or more, obtuse or rounded at each end or sometimes acutish, densely ferruginous-tomentose beneath; panicles rather open, many-flowered, the branches puberulent; hypanthium densely pubescent, the calyx teeth broadly triangular, acute; corolla densely tomentose, the tube 8 mm. long, the narrow lobes 7 mm. long. Neg. 126.

Puno: Mountains near Sangabán, *Lechler*, type; photo. seen ex hb. Berol.

The species was based upon scant material and its status is uncertain.

Ladenbergia graciliflora Schum. in Mart. Fl. Bras. 6, pt. 6: 145. 1889.

A small tree, the branchlets rufous-tomentulose; stipules lance-oblong, more than 2 cm. long, attenuate; leaves slender-petiolate, subcoriaceous, the blades oblong or ovate, 11–13 cm. long, 5–6.5 cm. wide, acute or acuminate, obtuse or rounded at the base, lustrous, at first puberulent but soon glabrate; panicles 6–8 cm. long, dense,

many-flowered, the branches puberulent, the flowers short-pedicellate; calyx lobes triangular-lanceolate, glabrous or nearly so; corolla white, 3-3.5 cm. long, tomentulose, the narrow lobes less than half as long as the tube; capsule linear, glabrous, 4-5 cm. long. Negs. 154, 141.

San Martín: Near Tarapoto, *Spruce 4581*, type collection. Also in Goyaz, Brazil.

Ladenbergia heterophylla (Wedd.) Standl. Field Mus. Bot. 7: 18. 1930. *Cascarilla heterophylla* Wedd. Ann. Sci. Nat. III. 10: 10. 1848. *Buena heterophylla* Wedd. Journ. Linn. Soc. 11: 186. 1869.

Branchlets pubescent; stipules ovate or ovate-oblong, obtuse; leaves short-petiolate, submembranaceous, the blades rounded-ovate, 10-30 cm. long, obtuse or acutish, glabrate above, pilosulous beneath in the axils of the nerves; panicle corymbose, the branches tomentulose; calyx lobes rounded-ovate, obtuse; corolla twice as long as the calyx, tomentulose; capsule 10-15 cm. long, 12-15 mm. wide.

Reported by Weddell from Peru, without indication of the locality; also in Colombia.

I have seen no material representative of this species.

Ladenbergia magnifolia (R. & P.) Klotzsch in Hayne, *Arzneigew.* 14: sub. pl. 15. 1846. *Cinchona magnifolia* R. & P. Fl. 2: 53. pl. 196. 1799. *Cinchona grandifolia* Poir. Encycl. 6: 38. 1804. *Cinchona caduciflora* H. & B. Pl. Aequin. 168. 1813. *Cascarilla magnifolia*, *C. caduciflora*, *C. rostrata* Wedd. Ann. Sci. Nat. III. 10: 10. 1848. *Cascarilla magnifolia* var. *vulgaris*, var. *caduciflora*, var. *rostrata* Wedd. Hist. Nat. Quinq. 79. 1849. *Cinchona lutescens* Ruiz ex Vitm. Summa, Suppl. 1: 262. 1802.

A small or medium-sized tree with cinnamon-brown bark; stipules 2-3 cm. long, acute, sericeous; leaves long-petiolate, coriaceous, the blades elliptic to oblong-ovate, 10-30 cm. long, 7-20 cm. wide, acute or obtuse, acute to rounded at the base, glabrous above and often shining, beneath pubescent or usually almost glabrate but barbellate in the axils of the nerves; panicles usually large and open, many-flowered; calyx lobes triangular-ovate, acute, tomentulose; corolla white or pink, sericeous, 1.5 cm. long, the lobes about equaling the tube; capsule linear-oblong or lanceolate, 2.5-7 cm. long, 7-10 mm. broad, glabrate. Negs. 156-158, 575.

Huánuco: Described from Chinchao, Cochero, and Chacahuasi, *Ruiz & Pavón*; authentic material seen, ex hb. Berol. Posuso, 600

meters, 4705.—Cajamarca: Jaén, *Humboldt & Bonpland*, type material of *C. caduciflora*; seen in hb. Deless.—Junín: La Merced, 1,200 meters, 5759, 5725. Chanchamayo Valley, 1,500 meters, *Schunke* 270.—Loreto: Balsapuerto, 220 meters, *Klug* 3035. Pumayacu, *Klug* 3142. Iquitos, in forest, *Williams* 3781. Mishuyacu, *Klug* 1345, 1387; *Killip & Smith* 29952.—San Martín: Tarapoto, Mt. Campana, *Spruce* 4843. Bolivia to Colombia. "Cascarilla boba," "cascarilla amarilla," "cascarilla flor de azahar."

The tree once was believed to furnish quinine, but it was found later that its bark possessed no value as a drug. The tree is said to be highly ornamental when covered with its handsome white flowers, which exhale an odor suggestive of orange or jasmine blossoms.

Ladenbergia malacophylla Standl. Field Mus. Bot. 8: 157. 1930.

A tree 6–12 meters high, the branchlets densely tomentose; leaves petiolate, firm-membranaceous, the blades broadly oval or elliptic, 22–26 cm. long, 14–18 cm. wide, obtuse or almost rounded at the apex, broadly rounded or shallowly cordate at the base, pilosulous above, velutinous-pilose beneath; panicles rather large and many-flowered, the branches fulvous-tomentose, the flowers sessile or short-pedicellate; hypanthium densely pilose, the calyx 2–2.5 mm. long, the lobes ovate or triangular, acute or subobtuse; corolla white, densely sericeous, the slender tube 22–24 mm. long, the lobes half as long; capsule oblong, 2.5–4.5 cm. long, sparsely puberulent or pilosulous.

Junín: Porvenir, Pichis Trail, in dense forest, 1,500–1,900 meters, *Killip & Smith* 25914, type; 25434. Ecuador.

Ladenbergia pedunculata (Karst.) Schum. in Mart. Fl. Bras. 6, pt. 6: 146. 1889. *Cinchona pedunculata* Karst. in Koch & Fint. Wochenschr. 2: 30. 1859; Karst. Fl. Columb. 1: 53. pl. 36. 1859. *Remijia pedunculata* Flueck. Chinarinde 17. pl. 6. 1883.

A small tree 3–4.5 meters high, the young branches sericeous; stipules obovate, sericeous-pilose; leaves petiolate, coriaceous, the blades lanceolate to elliptic or ovate, 6–17 cm. long, 3–8 cm. wide, acuminate, at the base attenuate to subcordate, when young minutely appressed-pilose, pilose beneath in the axils of the nerves; inflorescences terminal and axillary, long-pedunculate, the branches pilosulous, the flowers subsessile; calyx lobes ovate or subulate, glabrous, sometimes ciliate; corolla white, 7–10 mm. long, appressed-pilose,

the lobes equaling the tube; capsules 1-2 cm. long, 6 mm. broad, glabrous.

San Martín: Tarapoto, *Spruce 4263*. Also in Colombia.

Ladenbergia Riveroana (Wedd.) Standl. Field Mus. Bot. 7: 201. 1931. *Cinchona oblongifolia* Lamb. Ill. Cinch. 12. 1821, non Mutis, 1793. *Cascarilla Riveroana* Wedd. Ann. Sci. Nat. III. 10: 11. 1848.

A tree, the branchlets ferruginous-tomentose or finally glabrate; stipules ovate-oblong, tomentose; leaves thin-coriaceous, short-petiolate, the blades oblong-lanceolate or ovate-oblong, 15-25 cm. long, 9-15 cm. wide, acute at each end or more rarely obtuse, puberulent or glabrate above, tomentose or puberulent beneath, with rusty pubescence; panicles rather large and many-flowered, ferruginous-tomentose; hypanthium tomentose, the calyx teeth ovate, acutish, tomentulose; corolla pilose, the tube 7-15 mm. long, the lobes 6-8 mm. long; capsule linear-lanceolate, 4-6 cm. long, ferruginous-tomentose. Neg. 113.

Junín: Huacapistana, 1,800-2,400 meters, *Killip & Smith 24214*, a shrub or tree 3-3.5 meters high.—San Martín: Zepelacio, 1,200-1,600 meters, *Klug 3515*. Bolivia to Ecuador. "Azahar macho," "azahar hembra."

Klug describes the species as a tree of 5 meters with white flowers.

Ladenbergia stenocarpa (Lamb.) Klotzsch in Hayne, *Arzneigew.* 14: sub *pl.* 15. 1846. *Cinchona stenocarpa* Lamb. Ill. Cinch. 13. 1821. *Cascarilla stenocarpa* Wedd. Hist. Nat. Quinq. 81. 1849. *Buena stenocarpa* Wedd. Journ. Linn. Soc. 11: 186. 1869.

Branchlets glabrate; stipules ovate; leaves short-petiolate, sub-membranaceous, the blades oblong-lanceolate, acute at each end, 12-15 cm. long, glabrous or pilose beneath along the costa; panicle open, many-flowered, the branches puberulent; hypanthium tomentulose, the calyx teeth ovate, acutish; corolla puberulent, the tube 13-15 mm. long, the lobes 9-10 mm. long; capsule linear, 3.5 cm. long. Neg. 135.

Cajamarca: Type from Jaén, *Pavón*; photo. of authentic material seen, ex hb. Berol. "Cascarilla azaharito."

12. CAPIRONA Spruce

Trees with large stipules; leaves large, opposite, petiolate; inflorescence terminal, paniculate, the flowers showy, 5-parted, zygomorphic; calyx cupular, 5-dentate, one of the teeth often

expanded into a large, foliaceous, colored limb; corolla somewhat gibbous from a tubular base, the limb campanulate and subbilabiate, the short lobes contorted in bud; stamens inserted above the base of the tube, the filaments villous at the base, the anthers linear; capsule clavate or obovate, 2-celled, septicidally bivalvate; seeds numerous, winged.

Capirona decorticans Spruce, Journ. Linn. Soc. 3: 200. 1859; Schum. in Mart. Fl. Bras. 6, pt. 6: 195. *pl.* 107. 1888.

A tree 13-16 meters high with reddish brown bark; stipules more or less foliaceous, acute or acuminate, 3-6 cm. long; leaves almost sessile, oblong to oval, 22-45 cm. long, obtuse or short-acuminate, very obtuse to subcordate at the base, almost glabrous; panicles 15-20 cm. long or more; calyx 3-4 mm. long, the expanded lobe obovate-spatulate, 5-7 cm. long, red, attenuate at the base; corolla 2.5-3 cm. long, the lobes ovate, obtuse; capsule 2-3 cm. long, woody. "Capirona negra."

San Martín: Near Tarapoto, *Spruce 4202*, type collection. Tarapoto, in forest, *Williams 6070*. Also in Colombia.

13. HILLIA Jacq.

Shrubs, usually epiphytic, glabrous, with thick branches; stipules membranaceous, caducous; leaves opposite, fleshy, drying thick and hard; flowers large and showy, solitary or clustered, surrounded by an involucre of leaves or bracts, 4-6-parted; calyx none or composed of 2-6 free or short-connate segments, persistent or caducous; corolla salverform or funnelform-tubular, the lobes contorted, the throat glabrous; stamens inserted below the throat of the corolla, included, the anthers oblong; fruit a cylindric capsule, somewhat attenuate at each end, septicidally bivalvate; seeds fusiform, bearing a tuft of hairs at one end.

Leaves small, mostly 7-8 mm. wide. *H. Macbridei*.

Leaves comparatively large, commonly 2-8 cm. wide.

Corolla tube conspicuously dilated in the throat and 1.5-2.5 cm. wide; calyx lobes persistent.

Leaf blades rounded or very obtuse at the base, mostly 2-3.5 cm. wide; corolla about 4 cm. long. *H. Ulei*.

Leaf blades acute at the base, 4-7 cm. wide; corolla about 5.5 cm. long. *H. illustris*.

Corolla tube slender, scarcely dilated in the throat and less than 1 cm. wide; calyx lobes deciduous.

Veins of the leaves conspicuous; lobes of the corolla about half as long as the tube..... *H. Killipii*.

Veins of the leaves obscure or obsolete; lobes of the corolla less than one-third as long as the tube.

Leaf blades elliptic or oblong-elliptic, rounded to acute at the base..... *H. parasitica*.

Leaf blades narrowly oblanceolate-oblong, attenuate to the base..... *H. Weberbaueri*.

Hillia illustris (Vell.) Schum. in Mart. Fl. Bras. 6, pt. 6: 202. 1889. *Saldanha illustris* Vell. Fl. Flum. 3: pl. 157. 1827; text, ed. Netto 134.

Leaves short-petiolate, thick and hard when dried, the blades elliptic or broadly elliptic-ovate, 10–16 cm. long, abruptly acuminate; flowers solitary, subtended by 2 large stipules, these 1.5–2 cm. long, obtuse; calyx lobes 6, linear-subulate, herbaceous, 1.5–2 cm. long; corolla white, the short lobes ovate-rounded, recurved; capsule 10 cm. long and 1 cm. thick. Neg. 234.

Loreto: Río Itaya, in forest, *Williams 99*. Extending to Brazil and the Guianas.

Hillia Killipii Standl. Field Mus. Bot. 8: 159. 1930.

Described as a tree 3–4.5 meters high; stipules narrowly oblong, rounded at the apex, 2.5 cm. long; petioles slender, 1–1.5 cm. long; leaf blades comparatively thin, elliptic-oblong, 7.5–9.5 cm. long, 3–3.5 cm. wide, abruptly long-acuminate, acute at the base; flowers terminal, solitary, sessile, subtended by 2 stipules; calyx obsolete; corolla white, the slender tube 8 cm. long, the 6 lobes lance-linear, 4–4.5 cm. long.

Junín: Between San Nicolás and Azupizú, in dense forest, 650–900 meters, *Killip & Smith 26085*, type.—Loreto: Pumayacu, 100–600 meters, a liana on a tree, *Klug 3145*.

Hillia Macbridei Standl. Field Mus. Bot. 4: 277. 1929.

A small epiphytic shrub; stipules lanceolate or linear-lanceolate, caducous, 1.5–2 cm. long; petioles 3–5 mm. long; leaf blades lanceolate, 2–3 cm. long, narrowed to the subobtuse apex, acute at base, the veins obsolete; flowers terminal, solitary, sessile; calyx persistent, the 5 lobes oblong-ovate, obtuse, 5 mm. long; capsule narrowly clavate, 5.5–6.5 cm. long, 1 cm. wide.

Junín: La Merced, 1,200 meters, *Macbride 5760*, type. Chanchamayo Valley, 1,500 meters, *Schunke 436*. Above San Ramón, 1,300–1,700 meters, *Schunke A100*.

Hillia parasitica Jacq. Enum. Pl. Carib. 18. 1760. *Cosmibuena acuminata* R. & P. Fl. 3: 4. pl. 226. 1802. *Buena acuminata* DC. Prodr. 4: 356. 1830. *H. odorata* Krause, Bot. Jahrb. 40: 321. 1908.

A glabrous, epiphytic shrub, sometimes as much as 2 meters high, with stout branches; stipules 8–12 mm. long or more, obtuse; petioles thick, 2–7 mm. long; leaf blades mostly 5–11 cm. long, short-acuminate; flowers solitary, sessile; calyx lobes linear-lanceolate, obtuse, 4 mm. long; corolla white, the tube 6.5–12 cm. long, the 6 lobes linear-lanceolate to oblong; capsule cylindric, 7–9 cm. long. Negs. 235, 236 (*H. odorata*).

Amazonas: East of Chachapoyas, *Weberbauer 4364*.—Huánuco: Type of *Cosmibuena acuminata* from Chicoplaya, *Ruiz & Pavón*.—Junín: Chanchamayo Valley, *Schunke 290*. Huacapistana, 1,800 meters, *Weberbauer 2152*, type of *H. odorata* (photo. and fragm. seen, ex hb. Berol.). Ranging to Brazil, Mexico, and the West Indies.

Hillia Ulei Krause, Verh. Bot. Ver. Brandenb. 50: 97. 1908.

A glabrous epiphyte with stout branches; leaves short-petiolate, the blades broadly ovate or elliptic, 4–6.5 cm. long, obtusely short-acuminate or acute, rather conspicuously palmate-nerved, very thick; flowers terminal, solitary, pedicellate; calyx lobes 6, linear, 10–12 mm. long; corolla grass-green, the tube gradually narrowed from throat to base, the lobes short and broad; capsule 8–10 cm. long. Neg. 237.

Loreto: Near Yurimaguas, *Ule 6303*, type (photo. and fragm. seen ex hb. Berol.). Mishuyacu, near Iquitos, 100 meters, *Klug 1182*.

Hillia Weberbaueri Standl. Field Mus. Bot. 11: 214. 1936.

A glabrous epiphyte with stout branches; stipules oblong, obtuse, 18 mm. long; leaves short-petiolate, the blades narrowly oblanceolate-oblong, 8.5–13.5 cm. long, 2.5–3.5 cm. wide, abruptly rather long-acuminate, long-attenuate to the base, with about 8 pairs of lateral nerves; flowers terminal, solitary; calyx none or caducous; corolla 6-parted, the very slender tube 7 cm. long, the lobes oblong, obtuse, 1.5 cm. long.

Without locality: *Weberbauer 6955*, type.

14. COSMIBUENA R. & P.

Glabrous shrubs, usually epiphytic, often scandent; stipules caducous; leaves opposite, thick and fleshy; flowers large and showy, pedicellate, solitary or clustered, 5-6-parted; calyx 5-6-lobate, circumscissile at the base; corolla salverform, the lobes contorted, fleshy, the tube rather slender and much elongate; stamens inserted below the throat of the corolla, the anthers linear; capsule oblong or cylindric, 2-celled; seeds numerous, oblong or lanceolate, winged, the wings fimbriate or erose at the apex.

Cosmibuena grandiflora (R. & P.) Rusby, Bull. N. Y. Bot. Gard. 4: 368. 1907. *Cinchona grandiflora* R. & P. Fl. 2: 54. pl. 198. 1799. *C. obtusifolia* R. & P. Fl. 3: 3. pl. 198. 1802. *Buena obtusifolia* DC. Prodr. 4: 356. 1830.

A small or large, epiphytic shrub; leaves on stout petioles, the blades elliptic to obovate, 8-13 cm. long or larger, rounded at the apex, acute at the base, very thick, the nerves inconspicuous; calyx 10-12 mm. long, tubular below, soon deciduous; disk large and conspicuous; corolla white, the tube 6-9 cm. long, the lobes oblong, obtuse, about 2.5 cm. long; capsule 4-5 cm. long. Neg. 240.

Huánuco: Type from Posuso, *Ruiz & Pavón*. Monzón, 900 meters, *Weberbauer 3502*.—Junín: Reported by Ruiz and Pavón from Pueblo Nuevo de San Antonio de Chicoplaya.—Loreto: Moyobamba, 800 meters, *Weberbauer 4713*.—San Martín: Near Tarapoto, *Spruce 4179*.—Department uncertain: Without locality, *Pavón; Maclean*. Ranging from Colombia to Bolivia.

15. CALYCOPHYLLUM DC.

Trees with opposite leaves; stipules caducous; flowers small, 4-8-parted, arranged in terminal cymes, the bracts and bractlets large and membranaceous and enclosing the buds; calyx almost obsolete or of short segments, one of the segments in some of the flowers often expanded into a large, colored limb; corolla short-funnelform, lobed to the middle or more deeply, the segments imbricate in bud, the throat villous; stamens inserted in the throat, long-exserted; capsule costate, elongate, 2-celled, septicidally bivalvate; seeds small, winged.

Calycophyllum Spruceanum (Benth.) Hook. f. ex Schum. in Mart. Fl. Bras. 6, pt. 6: 191. pl. 106. 1889. *Eukylista Spruceana* Benth. Kew Gard. Misc. 5: 230. 1853.

A tree 15-27 meters high, with brown bark; leaves petiolate, the blades oblong to oblong-ovate, acute or obtuse, acute to obtuse at the base, 9-17 cm. long, minutely puberulent beneath at first but soon glabrate, barbate in the axils of the nerves; cymes dense and many-flowered, the inflorescences at first wholly enclosed by the thin bracts; calyx 6-9-dentate, the lobes all minute; corolla white, 6-7 mm. long, the lobes spreading; hypanthium densely white-pilosulous; capsule oblong, 8-11 mm. long, densely appressed-pilose. Neg. 8601.

Loreto: La Victoria on the Amazon, in forest, *Williams* 3010, 2855. Lower Río Nanay, *Williams* 455. Iquitos, *Williams* 8033. Yurimaguas, *Williams* 4486. Río Huallaga, *Spruce*. Río Ucayali, *Tessmann* 3378. Balsapuerto, 220 meters, *Klug* 3005. Rancho Indiana, 110 meters, *Mexia* 6458. Florida, Río Putumayo, riverside forest, 180 meters, *Klug* 2190. Fortaleza, 140 meters, *Klug* 2814. Also in eastern Bolivia and Amazonian Brazil.

"Capirona." Huber reports the tree as common along the lower Ucayali, where it forms forests known as capironales. The Brazilian name is "pao mulato." The wood is said to be strong, yellowish blackish, and useful for making various utensils and for construction purposes. It also is used extensively as firewood. Mrs. Mexia states that the bark is glossy and dark red, and that the flowers are slightly fragrant.

16. LORETOA Standl.

Large, glabrous trees; stipules large, persistent; leaves opposite, petiolate, coriaceous; flowers large, 5-parted, sessile or pedicellate, arranged in a large, terminal, sessile panicle composed of numerous open cymes; calyx cupular, shallowly 5-6-dentate, densely sericeous within; corolla clavate-funnelform, the short lobes contorted; anthers basifixed, on slender filaments inserted above the base of the tube; ovary 2-celled, the ovules peltately imbricate, winged.—The genus consists of a single known species.

Loretoa peruviana Standl. Field Mus. Bot. 11: 222. 1936.

A tree 20 meters high; stipules 3.5 cm. long, very obtuse or acutish; leaf blades broadly elliptic or suborbicular, 15-18 cm. long, 12 cm. wide, rounded at the apex, very obtuse or rounded at the base; panicle 25 cm. long, with numerous large, spreading bracts, the pedicels bracteolate; calyx 3 mm. high and 7-10 mm. wide; corolla rose-garnet, almost 4 cm. long, the tube 12 mm. wide near the middle, the rounded lobes 8 mm. long.

Loreto: Florida on the Río Putumayo, 200 meters, in forest, *Klug 2022*, type.

Called "meta guais." The fruit of this tree is not known, and there is consequently some doubt regarding the proper position of the genus.

17. FERDINANDUSA Pohl

Trees or shrubs, glabrous or sparsely pubescent; stipules caducous; leaves opposite, often coriaceous, short-petiolate; flowers 4-5-parted, cymose-paniculate; calyx cupular, shortly dentate; corolla funnelform, the lobes sometimes recurved, bifid at the apex, contorted in bud, glabrous; anthers sessile, exserted or included; ovary turbinate or oblong, 2-celled; capsule globose to cylindric, bisulcate, bivalvate from the apex; seeds winged.

Corolla tube 3-4.5 cm. long; leaves with short scattered hairs on the lower surface.....*F. loretensis*.

Corolla tube less than 1.5 cm. long; leaves glabrous...*F. chlorantha*.

Ferdinandusa chlorantha (Wedd.) Standl. Trop. Woods 34: 41. 1933. *Gomphosia chlorantha* Wedd. Ann. Sci. Nat. III. 10: 14. 1848. *G. laxiflora* Benth. in Hook. Kew Journ. 5: 232. 1853. *F. andina* Wedd. Ann. Sci. Nat. IV. 1: 78. 1854.

A shrub or tree 3-20 meters high or more, glabrous throughout; stipules lanceolate; leaves very shortly petiolate, the blades coriaceous, ovate to oblong, 7-12 cm. long, acuminate, rounded to acutish at the base; panicles small and dense, leafy at the base; calyx lobes very short, acute or acuminate; corolla glabrous, white or greenish, the lobes short, rounded; capsule oblong, 1.5-2.5 cm. long, 5-7 mm. wide. Neg. 249.

Loreto: Forest between Río Nanay and Río Napo, *Williams 697*. Mishuyacu, near Iquitos, 100 meters, in forest, *Killip & Smith 29902*; *Klug 294, 139*. Puno: Province of Carabaya, *Weddell* (photo. of type seen, ex hb. Berol.). Perhaps also in Bolivia.

"Louro-micuna," "guacamayo." It is somewhat uncertain whether the tree of Loreto (which seems to be *F. Paxii* Winkl.) is really identical with *F. chlorantha*, but a reading of Weddell's descriptions and examination of a photograph of the type reveal no important differences. Weddell states that the tree is a typical one of the regions in which it grows, its clean, silvery trunk rising well above the surrounding trees.

Ferdinandusa loretensis Standl. Field Mus. Bot. 8: 337. 1931.

A tree 6 meters high, the branchlets sparsely puberulent or glabrate; leaves coriaceous, short-petiolate, the blades oblong-elliptic, 11–15 cm. long, abruptly short-acuminate, rounded at the base or abruptly contracted; inflorescence small and few-flowered, short-pedunculate, the flowers pedicellate; calyx teeth triangular, acute; corolla white, glabrous, the 4 lobes 8–10 mm. long; capsule obanceolate-oblong, 3.8 cm. long, 1.4 cm. wide.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 1348, type.

18. EXOSTEMA Rich.

Shrubs or trees; stipules distinct or short-connate, persistent or deciduous; leaves opposite, petiolate; flowers small or large, axillary and solitary or arranged in panicles, 5–6-parted; calyx campanulate, lobate; corolla salverform or funnelform, the tube long or much elongate, glabrous or pilose in the throat, the lobes linear, imbricate in bud; stamens exserted, the anthers linear; capsule 2-celled, coriaceous or woody, cylindric to obovate, septicidally bivalvate; seeds imbricate, winged.

Corolla 10–12 cm. long.....*E. maynense*.

Corolla 1.5–2.5 cm. long.

Leaf blades truncate or subcordate at the base . . . *E. peruvianum*.

Leaf blades mostly acute or acutish at the base . *E. corymbosum*.

Exostema bicolor P. & E. Nov. Gen. & Sp. 3: 32. 1845.

A small tree; leaf blades very broadly ovate or elliptic, acuminate, about 10 cm. long and 7.5 cm. wide, glabrous; flowers pubescent, in terminal, trichotomous corymbs; calyx lobes linear; corolla purplish green, pubescent, about 2.5 cm. long, the lobes oblong, equaling the tube; capsule rounded, compressed. Neg. 8603.

Huánuco: Type from Cerro San Cristóbal, near Cochoero, *Poeppig*.—Without locality: *Poeppig* 1352 (probably the original collection).

The species is not included in the key because I am unable to separate it, by description, from *E. peruvianum* and *E. corymbosum*. Probably it is not specifically distinct from *E. peruvianum*.

Exostema corymbosum (R. & P.) Spreng. Syst. Veg. 1: 706. 1825. *Portlandia corymbosa* R. & P. Fl. 2: 49. pl. 190, f. a. 1799.

A tree 4–6 meters high; leaves short-petiolate, subcoriaceous, the blades ovate to oblong, mostly 7–10 cm. long, acute or acuminate, glabrous or sparsely pubescent beneath; flowers in terminal, leafy, many-flowered corymbs; calyx lobes elongate, linear; corolla white or purplish white, pubescent outside, about 2 cm. long, the lobes linear, equaling the tube; capsule ferruginous, 8 mm. long. Neg. 8602.

Cajamarca: Province of Hualgayoc, *Weberbauer 4166*.—Huan-cavelica: Tayacaja, *Weberbauer 6482*.—Huánuco: Described from Chaclla and Muña, *Ruiz & Pavón*. Muña, 2,100 meters, dry steep slope, 3972.

Exostema maynense P. & E. Nov. Gen. & Sp. 3: 31. 1845.

A tree, sometimes 20 meters high, with red wood; leaves petiolate, rather thin, oblong to broadly ovate, acuminate, glabrous, 7–15 cm. long; flowers cymose-corymbose, terminal; calyx 5–6-dentate, the teeth broad, short-acuminate; corolla 10–12 cm. long, the lobes linear, one-third as long as the tube; capsule obovoid, acute at the base, 3 cm. long. Neg. 251.

Loreto: Forests of Mainas near Yurimaguas, *Poeppig* (photo. of type seen, ex hb. Berol.). Mainas, *Poeppig D2392*. Middle Marañón, *Tessmann 4888*. Balsapuerto, 220 meters, *Klug 3064*; a tree of 15 meters with white flowers.—Without locality: *Poeppig 3076*, probably the type collection.

“Puca yanta.” *Poeppig* reports that the very bitter bark was used in domestic medicine. The flowers are said to have the odor of orange blossoms.

Exostema peruvianum Humb. & Bonpl. Pl. Aequin. 1: 133. *pl.* 38. 1808.

A shrub 3–3.5 meters high, the trunk 10 cm. in diameter; leaves ovate or broadly oblong, coriaceous, acute, 5–7.5 cm. long, glabrous, the upper ones sessile and cordate at the base; flowers fragrant, in dense, leafy, terminal corymbs; calyx lobes lanceolate, acute; corolla pink, pubescent, 2 cm. long, the lobes linear, spreading, equaling the tube. Neg. 563.

Huánuco: Casapí, *Mathews 1450*. Type from the Andes of Peru (photo. seen, ex hb. Berol.).—Department uncertain: Callcate, *Jelski 366*.

Probably this is not distinct from *E. corymbosum*.

19. COUTAREA Aubl.

Shrubs or trees, the branches with conspicuous elevated lenticels; stipules persistent; leaves opposite, short-petiolate, rather thin; inflorescence terminal or axillary, the flowers mostly solitary or ternate, usually large and showy, asymmetric, 5-8-parted; calyx cupular, lobate; corolla tubular-campanulate, often gibbous and somewhat bilabiate, the lobes contorted or imbricate, the throat glabrous; stamens inserted at the base of the tube, included or exerted, the anthers linear; capsule compressed contrary to the partition, obovate, woody or coriaceous; seeds broadly winged.

Coutarea hexandra (Jacq.) Schum. in Mart. Fl. Bras. 6, pt. 6: 196. 1889. *Portlandia hexandra* Jacq. Sel. Stirp. 63. pl. 182, f. 20. 1763. *C. speciosa* Aubl. Pl. Guian. 1: 314. pl. 122. 1775. *Bignonia triflora* Pav. ex DC. Prodr. 9: 148. 1845, in syn.

A shrub or small tree; leaves lanceolate to ovate or elliptic, mostly 7-13 cm. long, acute or acuminate, acute to rounded at the base, nearly glabrous; flowers chiefly in terminal clusters of 2-3; corolla whitish or greenish, 4-5 cm. long; capsules 2-3.5 cm. long, broadly rounded at the apex, marked with numerous pale lenticels.

Loreto: Río Masana, *Williams* 158.—Without locality, *Pavón*; type material of *Bignonia triflora*. Widely distributed in tropical America.

The bark is bitter, and in some regions it has been employed in domestic medicine as a substitute for quinine. In Brazil the species is called "quina do Piahy," "quina do Pernambuco," and "murta do mato."

Coutarea hexandra var. *tarapotensis* Schum. (in Mart. Fl. Bras. 6, pt. 6: 198. 1889) was based upon *Spruce* 4943 from Tarapoto. It is merely a form with unusually large leaves.

20. POGONOPUS Klotzsch

Shrubs or trees; stipules almost free, deciduous; leaves opposite, herbaceous, petiolate; flowers showy, in opposite-branched panicles, 5-parted; calyx tubular, lobate, one of the lobes often expanded into a large, brightly colored limb; corolla tubular, the short lobes valvate in bud, the tube somewhat curved, pilose within above the base; stamens inserted in the upper part of the tube, unequal, the anthers sagittate; capsule subglobose, 2-celled, loculicidally bivalvate; seeds numerous, minute, horizontal, compressed and marginate.

Pogonopus tubulosus (DC.) Schum. in Mart. Fl. Bras. 6, pt. 6: 265. 1889. *Calycophyllum tubulosum* DC. Prodr. 4: 367. 1830.

A shrub or tree 2-5 meters high or larger; leaves short-petiolate, the blades ovate, obovate, or elliptic, large, short-acuminate, densely pubescent or glabrate; stipules 3-4 mm. long; calyx 2 mm. long, the lobes subulate; corolla pale lilac, 3.5 cm. long, minutely puberulent or glabrate; enlarged sepal with a rounded, pink blade as much as 12.5 cm. broad; capsule woody, 7 mm. long.

Cuzco: Chanchamayo, Lares Valley, 1,000 meters, *Weberbauer* 7940.—Junín: La Merced, 700 meters, in thickets, *Killip & Smith* 23811.—Madre de Dios: Seringal San Francisco, Río Acre, *Ule* 9848. Also in Brazil, Bolivia, and Argentina. "Quina" (Bolivia).

The tree is an exceedingly showy one when in flower, because of the enlarged and brilliantly colored calyx lobes.

21. CONDAMINEA DC.

Shrubs or trees; stipules often bipartite; leaves opposite, often large and coriaceous; flowers mostly large, 5-parted, disposed in large, terminal panicles; calyx campanulate, truncate or dentate, deciduous; corolla salverform, pubescent in the throat, the lobes valvate; stamens inserted in the corolla throat, the filaments subulate, pilose at the base; capsule usually pyriform and truncate at the apex, bisulcate, loculicidally bivalvate, more or less woody; seeds horizontal, minute, angled, compressed.

Calyx scarcely 1 mm. long. Leaves petiolate. *C. microcarpa*.

Calyx 5-7 mm. long.

Leaves sessile or nearly so, acuminate. *C. corymbosa*.

Leaves long-petiolate, very obtuse. *C. macrophylla*.

Condaminea corymbosa (R. & P.) DC. Prodr. 4: 402. 1830; Schum. in Mart. Fl. Bras. 6, pt. 6: 257. *pl.* 124. 1889. *Macrocnemum corymbosum* R. & P. Fl. 2: 48. *pl.* 189. 1799.

A shrub or small tree 1-6 meters high, glabrous or nearly so, with stout branches; leaves mostly sessile and clasping, oblong to obovate, 20-60 cm. long or larger, cordate at the base, coriaceous; cymes corymb-like, large, long-stalked, many-flowered; corolla 2.5 cm. long, reddish outside, whitish or cream-colored within; capsules about 1.7 cm. long, obtuse or acutish at the base. Neg. 567.

Huánuco: Described from Chinchao, Acomayo, Pillao, and Muña, *Ruiz & Pavón*. Yanano, 1,800 meters, open hillside, 3652.

Pampayacu, *Kanehira* 107.—Junín: Huacapistana, 2,000 meters, *Killip & Smith* 24130. Chanchamayo, *Martinet* 1412. La Merced, 700 meters, wooded valley, *Killip & Smith* 23506.—San Martín: San Roque, 1,400 meters, in forest, *Williams* 7794. Bolivia to Panama.

"Saucu" (*Williams*); "ccaratu" (*Ruiz & Pavón*). *Ruiz & Pavón* state that the bark, although not very bitter, was used as an adulterant of cinchona bark.

Condaminea corymbosa var. *pubescens* Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 258. 1889. *C. angustifolia* Rusby, Mem. Torrey Club 6: 45. 1896.

Leaves densely and finely pubescent beneath, often short-petiolate; inflorescence finely and densely pubescent.

Ayacucho: Carrapa, 1,000 meters, wooded hillside, *Killip & Smith* 22449.—Cuzco: San Miguel, Urubamba Valley, 1,800 meters, *Cook & Gilbert* 913.—San Martín: Near Tarapoto, *Spruce* 4579, type. Zepelacio, 1,100 meters, a tree of 5 meters, *Klug* 3672. Also in Bolivia.

Condaminea glabrata DC. Prodr. 4: 402. 1830. *Macrocnemum glabratum* Bartl. ex DC. loc. cit. as syn.

Leaves obovate, short-acuminate, cuneate-attenuate at the base, glabrous; panicle glabrous, the flowers glomerate.

Huánuco: Type from the mountains of Huánuco, *Haenke*.

The species is known to the writer only from the brief original description.

Condaminea macrophylla P. & E. Nov. Gen. & Sp. 3: 30. 1845.

A tree 10–13 meters high; leaves long-petiolate, the blades oval, 30–40 cm. long, about 25 cm. wide, very obtuse, rounded or cordate at the base, glabrous; inflorescence 20–30 cm. long, the flowers pedicellate; calyx irregularly dentate, sericeous within.

Loreto: Type from forests of Yurimaguas, *Poeppig* 2463.

Schumann (in Mart. Fl. Bras.) states that this plant may be a *Rustia* rather than a *Condaminea*.

Condaminea microcarpa (R. & P.) DC. Prodr. 4: 402. 1830. *Macrocnemum microcarpum* R. & P. Fl. 2: 49. pl. 188, f. a. 1799.

A slender shrub or small tree; leaves petiolate, the blades elliptic or oblong-elliptic, obtusely acuminate, obtuse at the base, glabrous above, short-pilose beneath; flowers racemose-paniculate, sessile,

clustered; bracts ovate, obtuse, ciliate; corolla small, white; calyx cupular, 0.8 mm. long, shallowly dentate; capsule turbinate or oval, 3.5-4 mm. long, the seeds minute.

Huánuco: Described from Chinchao and Cochero, *Ruiz & Pavón*.

Although I have seen a specimen of this species, in the Delessert Herbarium, I am doubtful as to its proper generic position. It is scarcely a species of *Condaminea*.

Condaminea venosa (R. & P.) DC. Prodr. 4: 402. 1830.
Macrocnemum venosum R. & P. Fl. 2: 49. pl. 190, f. b. 1799.

A shrub 3.5 meters high; leaves petiolate, the blades oblong-elliptic, acutely acuminate, conspicuously nerved, puberulent on the nerves; flowers small, white, sessile, in terminal panicles.

Cuzco: Acomayo and Pati, *Pavón*.

Scarcely a true *Condaminea*; perhaps a species of *Chimarrhis*.

22. CHIMARRHIS Jacq.

Trees; stipules interpetiolar, acuminate, caducous; leaves opposite, short-petiolate; flowers very small, in pedunculate, axillary, corymbiform panicles, 5-parted; calyx cupuliform, dentate or truncate; corolla short-funnelform, the lobes valvate, usually longer than the tube, villous within; stamens inserted in the corolla throat, the filaments elongate, villous below, the anthers dorsifixed; capsule small, oblong or subglobose, 2-celled, septicidally dehiscent; seeds numerous, minute, horizontal, angulate, reticulate, margined. Calyx deeply dentate; leaves not barbate beneath in the axils of the nerves.....*C. dioica*.

Calyx shallowly dentate; leaves barbate beneath in the axils of the nerves.

Stipules glabrous; calyx and hypanthium minutely puberulent.

C. Hookeri.

Stipules densely sericeous outside; calyx and hypanthium glabrous.

C. Williamsii.

Chimarrhis dioica Schum. & Krause, Bot. Jahrb. 40: 312. 1908.

A shrub 3 meters high, probably also a tree; leaves short-petiolate, the blades oblong or oblong-elliptic, 8-20 cm. long, 4-12 cm. wide, acuminate, acute at the base, often bullate and with strongly impressed veins, pilose or subtomentose beneath on the veins; flowers "dioecious," in panicles 3-6 cm. long; calyx lobes ovate, acute,

glabrous; corolla yellowish green, glabrous, rotate, 4–5 mm. long; capsule subglobose, 3 mm. long. Neg. 6.

Cajamarca: Shanyu, *Raimondi* 4501, 6111, 4842; *Jelski* 376. Also in Colombia and Ecuador.

Chimarrhis Hookeri Schum. in Mart. Fl. Bras. 6, pt. 6: 259. 1889.

Stipules 1–3 cm. long; leaves petiolate, the blades oblong or obovate-oblong, 10–20 cm. long, acute or subobtusate, acute at the base, glabrous except in the axils of the nerves, subcoriaceous; inflorescences chiefly terminal, ferruginous-tomentulose; calyx obscurely 5-dentate; corolla glabrous, 2 mm. long, the lobes very short, obtuse. Neg. 22786.

San Martín: Tarapoto, *Spruce* 4930, type collection.

Chimarrhis Williamsii Standl. Field Mus. Bot. 8: 162. 1930.

A tree as much as 25 meters high, with a trunk 50 cm. in diameter, the young branchlets sericeous or glabrate; stipules 13–15 mm. long; leaves petiolate, the blades obovate, 5–11 cm. long, acute or short-acuminate, cuneately narrowed to the base, beneath minutely appressed-pilosulous at first but soon glabrate; inflorescences terminal and pseudoaxillary, long-pedunculate, 6–9 cm. wide, densely many-flowered, the flowers sessile or short-pedicellate; calyx teeth triangular, ciliolate; corolla white, 2.5–3 mm. long, glabrous outside. "Tuwara," "yacu-caspi."

Loreto: Lower Río Nanay, *Williams* 409 (type), 369. Mouth of Río Santiago, upper Marañón, 160 meters, *Tessmann* 4668.

23. WARSCEWICZIA Klotzsch

Shrubs or trees; stipules glandular within at the base; leaves opposite, large, herbaceous or subcoriaceous; flowers small, 5-parted, in small, dense cymes, these forming a raceme-like panicle; calyx campanulate or cupular. 5-dentate, one of the teeth often expanded into a large, colored, foliaceous limb; corolla funnelform, villous in the throat, the short lobes imbricate; stamens inserted in the corolla throat, the filaments short or elongate; capsule small, 2-celled, septi-cidal, the valves entire or short-bifid; seeds minute, numerous, horizontal, marginate, reticulate.

Capsule 2–2.5 mm. long; few if any of the calyx teeth expanded into a large, colored limb.

Flowers glomerate and sessile *W. Schwackeana*.

- Flowers not glomerate, pedicellate *W. ambigua*.
 Capsule 4–5 mm. long; many of the calyx teeth expanded into a large,
 brightly colored limb.
 Leaf blades acute at the base *W. coccinea*.
 Leaf blades cordate or very obtuse at the base *W. cordata*.

***Warscewiczia ambigua* Standl., sp. nov.**

Frutex vel arbor 3–10-metralis, ramulis subteretibus vel plus minusve complanatis minute puberulis, internodiis elongatis; stipulae lanceolato-oblongae 1.5 cm. longae acuminatae deciduae scaberrulae; folia ut videtur parva breviter petiolata subcoriacea, petiolo crassiusculo 7–8 mm. longo puberulo; lamina elliptica 8.5–10.5 cm. longa 4.5 cm. lata abrupte subcuspidato-acuminata basi acuta et obliqua glabra vel glabrata, costa nervisque supra planis, costa subtus elevata valida, nervis lateralibus utroque latere circa 10 elevatis gracilibus fere rectis angulo acuto adscendentibus prope marginem arcuato-conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis ampla erecta paniculata pedunculata circa 22 cm. longa, floribus numerosissimis cymulosis, cymulis racemose dispositis paucifloris, rhachi complanata puberula, bracteis parvis triangularibus, pedicellis circa 2 mm. longis, glabris; capsula depresso-globosa costata 2.5 mm. lata basi rotundata brunnescens glabra, apice calyce subtruncato margine incurvo coronata, dente uno vel interdum dentibus 5 calycis in laminam foliaceam lanceolato-oblongam obtusam petiolatam glabram usque ad 7 mm. longam expansis; semina pallide brunnea minuta lucida punctata angulata vel subteretia.

Loreto: Cerro de Cumbasa, Tarapoto, Department of Loreto, alt. 800 meters, Sept., 1902, *E. Ule* 6375 (Herb. Delessert, type).

There is considerable doubt regarding the true generic position of the plant here described, but it agrees better with *Warscewiczia* than with any other genus with which I am familiar. In many characters it is similar to *W. Schwackei* Schum., but in that the flowers are glomerate and sessile, not pedicellate.

***Warscewiczia coccinea* (Vahl) Klotzsch, Monatsb. Akad. Berlin 1853: 497. 1853. *Macrocnemum coccineum* Vahl, Symb. Bot. 2: 38. 1791. *W. maynensis* Wedd. Ann. Sci. Nat. IV. 1: 72. 1854. *W. Poeppigiana* Klotzsch, loc. cit.**

A slender shrub or tree 9 meters high or less, with depressed crown; leaves short-petiolate, the blades membranaceous, elliptic-

oblong to obovate, 15–50 cm. long, acuminate, softly pubescent or glabrate beneath; cymes racemose, small, many-flowered, pedunculate; one lobe of the calyx in many of the flowers expanded into a bright red, oblong or elliptic, petiolate limb 4–6 cm. long; corolla 5–8 mm. long, yellow.

Huánuco: Cochero, *Poeppig* 1491. Pampayacu, *Kanehira* 37. —Cuzco: *Bues* 42. —Junín: La Merced, 600 meters, wooded slope, 5328; *Killip & Smith* 23808; *Weberbauer* 1833. Chanchamayo Valley, 1,200–1,600 meters, *Schunke* 317, 406. Above San Ramón, 1,300–1,700 meters, *Schunke* A34. —Loreto: Type of *W. maynensis* from Province of Mainas, *Poeppig*. Pongo de Manseriche, *Tessmann* 4783. La Victoria, on the Amazon, in pasture, *Williams* 2748, 2693. Caballo-cocha, in forest, *Williams* 2021. Río Itaya, *Williams* 135. San Antonio, *Williams* 3438. Yurimaguas, edge of forest, *Williams* 4720. Iquitos, *Williams* 8021; *Killip & Smith* 27162; *Huber* 1307. Without locality, *Fox* in 1911. Florida, *Klug* 2121, 2147. Río Putumayo, *Klug* 1626. Ranging to Brazil, the Guianas, and Central America.

“Puca-lisa.” An exceedingly showy and handsome tree when covered with the brilliant inflorescences. Called “curacy” and “rabo de arara” in Brazil. *Klug* reports the Huitoto names of “rafeicoño” and “rafeicoño-ey.”

Warscewiczia cordata Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 217. 1889.

A shrub or small tree 3.5–6 meters high; leaves short-petiolate, often subcoriaceous, the blades broadly elliptic or obovate to oblong, 15–30 cm. long or larger, short-acuminate, softly pilose beneath or glabrate; inflorescence like that of *W. coccinea*, the enlarged calyx lobes as much as 8 cm. long; corolla 5–6 mm. long. Neg. 70.

Junín: Colonia Perené, in thickets, *Killip & Smith* 25005. —Loreto: Pongo de Manseriche, Río Marañón, *Tessmann* 3902. Yurimaguas, in abandoned land, *Williams* 3852; *Mexia* 6080. Santa Rosa, common tree in forest, *Williams* 4888. —San Martín: Type from Tarapoto, *Spruce* 4898 (photo. seen, ex hb. Berol.). Tarapoto, *Williams* 5862. Zepelacio, 1,100 meters, *Klug* 3268.

Mrs. *Mexia* reports the vernacular name of “shambosisa,” and states that the Indians employ the juice extracted from the calyx lobes for dyeing skin.

Warscewiczia Schwackei Schum. in Mart. Fl. Bras. 6, pt. 6: 219. pl. 115. 1889.

A shrub or tree 3.5–10 meters high; leaves short-petiolate, coriaceous, the blades oblong to broadly elliptic, 15–25 cm. long, acuminate, acute to truncate at the base, puberulent or glabrate beneath; inflorescence spicate-paniculate, the flower clusters dense, head-like, sessile, the flowers also sessile; corolla 2 mm. long; capsule minutely pilose.

Loreto: Iquitos, in forest, 100 meters, *Williams 3701*; *Killip & Smith 27213*. Florida, 180 meters, in forest, *Klug 2156, 2125*. Also in the Amazon Valley of Brazil.

In aspect this tree is unlike the more common species of the genus, since the bright-colored, enlarged calyx lobes are very few—mostly at the base of the panicle—or altogether absent. Klug reports the Huitoto name as “jayacoma” or “tayacona.” He states that the flowers are white.

24. RONDELETIA L.

Shrubs or small trees; leaves opposite or rarely verticillate; inflorescence terminal or axillary, cymose, corymbose, or paniculate; calyx 4–6-lobate, the lobes sometimes unequal; corolla funnelform or salverform, the short lobes imbricate; anthers dorsifixed, erect; capsule 2-celled, usually globose, chartaceous or coriaceous, loculicidally or septicidally bivalvate; seeds minute, compressed or angulate, sometimes fusiform, often winged or appendaged.

Leaves white-tomentose beneath *R. peruviana*.

Leaves appressed-pilose beneath, green *R. loretensis*.

Rondeletia loretensis Standl., sp. nov.

Frutex 1.5 m. altus, ramis breviter pilis adscendentibus vel adpressis pilosis gracilibus, internodiis elongatis; stipulae persistentes oblongae suberectae circa 1 cm. longae adpresso-pilosae; folia majuscula breviter petiolata firme membranacea, petiolo 1–1.5 cm. longo adpresso-piloso; lamina oblongo-oblongata vel anguste elliptico-oblonga 12–19 cm. longa 4–6 cm. lata longiuscule anguste acuminata basin versus sensim attenuata, supra in sicco fusca sparse pilis gracillimis longiusculis pilosa, subtus pallidior ubique sed ad nervos densius pilis longis adpresso-pilosa, costa gracili elevata, nervis lateralibus utroque latere circa 16 gracillimis prominentibus subarcuatis angulo subrecto adscendentibus in marginem desinentibus; inflorescentia terminalis 6.5 cm. longe pedunculata cymosa 5 cm. lata et fere aequalta subaxe multiflora, floribus subsecundis fere sessilibus, ramis dense pilosis, bracteis parvis lanceolato-

oblongis; hypanthium anguste clavatum 4–5 mm. longum dense pilis brunnescentibus pilosum; sepala 2.5–3 mm. longa anguste oblongo-triangularia suberecta acuminata pilosa; corolla alba 4-loba extus pilis longis et brevibus intermixtis subsparsa pilosa, tubo gracili 10 mm. longo superne vix dilatato, lobis ovalibus 3 mm. longis obtusis.

Loreto: Florida, Río Putumayo, at mouth of Río Zubineta, 180 meters, in forest, *Klug 2151* (type in herb. Field Mus. No. 668,754).

The collector reports the Huitoto name as “voiguio-ey.”

Rondeletia peruviana Standl. Field Mus. Bot. 8: 342. 1931.

A tree 10 meters high, the branches whitish-tomentose; stipules 4–7 mm. long, oblong, obtuse or acutish; leaves short-petiolate, thick-membranaceous, the blades elliptic or oblong-elliptic, 6–14 cm. long, 2.5–6.5 cm. wide, acuminate, acute or rarely obtuse at the base, glabrous above, densely white-tomentose beneath; inflorescence terminal, cymose-paniculate, 4 cm. long, the flowers sessile or short-pedicellate; calyx lobes 4, oblong or narrowly triangular, acute or subobtuse; corolla white-tomentose, the tube 11–15 mm. long, the lobes rounded, 3 mm. long; capsule 6 mm. long.

Loreto: Mouth of Río Santiago, upper Marañón, 160 meters, in upland forest, *Tessmann 4223*, type.

Corolla described as olive-brown outside, the lobes white within. This species is the southernmost known in the genus, which attains its greatest development probably in Mexico.

25. **DOLICHODELPHYS** Schum. & Krause

Shrubs or small trees with rather large, opposite, subsessile leaves; stipules short-connate at the base, deciduous; flowers 5-parted, arranged in terminal, trichotomous cymes; calyx short, the lobes broadly ovate, acute or obtuse, accrescent in fruit; corolla funnelform, glabrous, naked in the throat, the lobes rounded, much shorter than the tube; stamens inserted slightly below the middle of the tube, the anthers oblong; ovary 2-celled, with several ovules in each cell; fruit capsular, bearing at the apex the persistent calyx.

Dolichodelphys chlorocrater Schum. & Krause, Verh. Bot. Ver. Brandenb. 50: 102. f. 1908.

A shrub or tree 2–6 meters high, the branchlets obscurely puberulent or glabrous; stipules ovate-lanceolate, subulate-acuminate, puberulent outside, 6–8 mm. long; leaves subsessile, rigid-herbaceous,

oblanceolate-oblong, 15-33 cm. long, 4-12 cm. wide, abruptly acuminate, gradually attenuate to the base, glabrous above and shining, minutely appressed-pilose beneath on the veins; flowers pedicellate; calyx lobes 2.5 mm. long; corolla yellow or cream-colored, the tube 10-13 mm. long, the lobes 2-2.5 mm. long; fruit oblong-ovoid, 1.5 cm. long, 7 mm. thick. Neg. 953.

Loreto: Cerro de Escalera, 1,200 meters, *Ule* 6774, type (photo. and fragm. of type seen, ex hb. Berol.). Also in Colombia.

The genus consists of a single species.

26. SICKINGIA Willd.

Trees or shrubs; stipules sometimes large, glandular within at the base; leaves opposite; flowers small or medium-sized, paniculate, 4-5-parted; calyx cupular or campanulate, truncate or dentate; corolla tubular or funnelform, usually pilose at the insertion of the stamens, the lobes short, imbricate or open in bud; stamens exserted, attached below the middle of the tube; capsule commonly globose, 2-celled, bivalvate; seeds large, horizontal, lunulate or semi-oblong, broadly winged.

Capsule oval-oblong, 6.5 cm. long; leaves 15-20 cm. wide.

S. Williamsii.

Capsule globose or depressed-globose; leaves mostly 5-8 cm. wide.

S. tinctoria.

Sickingia tinctoria (HBK.) Schum. in Mart. Fl. Bras. 6, pt. 6: 228. 1889. *Macrocnemum tintorium* HBK. Nov. Gen. & Sp. 3: 311. 1820.

A small or medium-sized tree, the young branches somewhat pubescent or almost glabrous; stipules oblong-subulate, 10-12 mm. long; leaves short-petiolate, the blades oblong or elliptic-oblong, mostly 8-15 cm. long, acute or acuminate, acute to cordate at the base, glabrous or nearly so; inflorescence sessile or short-pedunculate, dense; calyx lobes ovate or ovate-oblong, acute or obtuse; corolla 7-8 mm. long, yellowish white, turning reddish when dried, puberulent or glabrate, the short lobes rounded; capsule 1.5-2.5 cm. in diameter. Neg. 6058.

Loreto: Recreo, Yurimaguas, in forest, *Williams* 4132. Río Masana, in forest, *Williams* 110. Tira Doble, Río Nanay, *Williams* 909.—San Martín: Río Mayo, Tarapoto, *Williams* 6227. Tarapoto, *Williams* 6659. Alto Río Huallaga, *Williams* 6680. Also in Brazil and Venezuela.

"Machu sacha puca-quiroy," "puca-quiru." Called "ararina," "asarauba," and "pau d'arara" in Brazil. Most of the collections cited are in fruit or are sterile, and their determination is, therefore, more or less uncertain.

In this, as in other species of the genus, the fine-grained wood turns red as soon as cut and exposed to the air. The handsome coloration, unfortunately, disappears after the wood has been exposed for some time to the sunlight. Krukoff states that the wood is yellow and very durable. He reports that the flowers have a strong and agreeable odor of vanilla.

Sickingia Williamsii Standl. Field Mus. Bot. 8: 340. 1931.

A glabrous tree; petioles very short and thick; leaf blades thick-membranaceous, elliptic-obovate, 28-40 cm. long, obtuse, acute at the base; capsules woody, 3 cm. thick; seeds semiorbicular, thin, 1.5-2 cm. long, with a thin, pale wing. "Puca quiroy."

San Martín: Tarapoto, 750 meters, *Williams 5581*, type.

27. BATHYSA Presl

Shrubs or trees; stipules usually large, persistent or deciduous; leaves opposite, herbaceous or coriaceous; flowers 4-5-parted, small, in usually large, terminal panicles; calyx cupular, truncate or dentate; corolla funnelform or subrotate, the lobes imbricate, the tube pubescent within in the throat; fruit a globose or ellipsoid capsule, 2-celled, the valves woody, bifid at the apex; seeds numerous, minute, horizontal, more or less distinctly winged.

Pubescence mostly spreading; calyx truncate. *B. obovata*.

Pubescence closely appressed; calyx deeply dentate. . . *B. peruviana*.

Bathysa obovata (Ruiz) Schum. ex Standl. Field Mus. Bot. 7: 280. 1931. *Macrocnemum obovatum* Ruiz in herb.

Branches densely fulvous-tomentose; stipules caducous; leaves short-petiolate, the blades broadly obovate-oblong, about 30 cm. long and 13 cm. wide, obtuse or rounded at the apex, obtuse to rounded at the base and often short-decurrent, hispidulous-pilose above, densely spreading-pilose beneath; inflorescence long-pedunculate, cymose-paniculate, many-flowered, 14 cm. long and broad; corolla 6-7 mm. long, glabrous outside, densely barbate in the throat, the lobes equaling the tube. Neg. 33.

Huánuco: Chicoplaya, in 1798, *Tafalla*, type. Also in Bolivia.

Bathysa peruviana Krause, Verh. Bot. Ver. Brandenb. 50: 96. 1909.

A shrub or tree 3–15 meters high; stipules about 4 mm. long, deciduous; leaves short-petiolate, the blades obovate, 14–25 cm. long, obtuse and short-acuminate at the apex, acute at the base, sparsely appressed-pilose or sericeous beneath; flowers in rather large, long-pedunculate panicles 8–10 cm. long; calyx lobes unequal, sericeous outside; corolla white or ochroleucous, glabrous outside, the tube as long as the calyx. Neg. 32.

Amazonas: Pongo de Manseriche, Río Marañón, *Tessmann* 4178. —Junín: San Nicolás, Pichis Trail, 1,100 meters, in dense forest, *Killip & Smith* 26060. —Loreto: Yurimaguas, *Ule* 6768, type. Pumayacu, 600–1,200 meters, in forest, a tree of 5 meters with cream-colored flowers, *Klug* 3222. Balsapuerto, in forest, a tree of 6 meters with white flowers, *Klug* 3053.

28. SIPANEA Aubl.

Annual or perennial herbs with terete stems; stipules connate with the petioles; leaves opposite, short-petiolate, narrow; flowers small, commonly in terminal cymes, 5-parted; calyx divided almost to the base into narrow lobes; corolla salverform, pilose or villous in the throat, the lobes contorted in bud; stamens inserted near the middle of the corolla tube, the anthers linear; capsule 2-celled, loculicidally dehiscent from the apex; seeds numerous, minute, foveolate.

Sipanea hispida Benth. ex Wernham, Journ. Bot. 55: 173. 1917. *S. pratensis* Schum. in Mart. Fl. Bras. 6, pt. 6: 249. 1889, ex parte, non Aubl.

A slender, erect, rough-hirsute herb, apparently annual, 60 cm. high or less, branched; leaves elliptic-lanceolate to oblong-lanceolate, acute or acutish, sessile or short-petiolate; cymes dichotomous, sparsely branched, the branches often spike-like; calyx lobes linear, 3–4 mm. long; corolla pinkish or white, pilose, the tube 6–9 mm. long; capsule covered with slender hairs having enlarged bases. "Pupa quihua." Neg. 25757.

Junín: Chanchamayo Valley, 1,000–1,200 meters, *Schunke* 383, 1487, 1390, 1414, 353, 352, 1524. Puerto Yessup, 400 meters, *Killip & Smith* 26270. Porvenir, 1,500–1,900 meters, *Killip & Smith* 25909. San Ramón, 900–1,300 meters, *Killip & Smith* 24788. —Loreto: Florida, in clearing, *Klug* 2285. —San Martín: San Roque,

Williams 7409. Zepelacio, 1,200–1,600 meters, *Klug 3543*. Also in Brazil, Bolivia, and Paraguay.

29. MACBRIDEINA Standl.

Trees; stipules large, caducous; leaves opposite, short-petiolate, thick-membranaceous; inflorescence terminal, cymose-corymbose, few-flowered, the flowers large, 5-parted; calyx deeply lobate, the lobes triangular, deciduous, acuminate; corolla funnellform, glabrous within, the lobes contorted; stamens inserted in the throat of the corolla, the filaments very short, the anthers oblong-linear, exserted; capsule woody, obovoid, subcompressed, bisulcate, 2-celled, loculicidally bivalvate; seeds numerous, minute, horizontal, compressed, narrowly winged.—The genus consists of a single species.

Macbrideina peruviana Standl. *Trop. Woods* 20: 25. 1929.

A tree 6–12 meters high, the young branchlets short-pilose, soon glabrate; stipules oval-oblong, 2 cm. long, rounded at the apex; leaf blades obovate or obovate-oblong, 13–40 cm. long, obtuse and apiculate, cuneately narrowed to the base, glabrous above, beneath hispidulous-pilose when young but soon glabrate; branches of the inflorescence glabrous; calyx 5–6 mm. long; corolla green, glabrous, almost 5 cm. long, the lobes 2 cm. long; capsule 3 cm. long and 1.5 cm. wide.

Huánuco: Chinchao, *Ruiz & Pavón*.—Junín: La Merced, 600 meters, *5573*, type; *Killip & Smith 23783*. Above San Ramón, 1,300–1,700 meters, *Schunke A32*. Chanchamayo Valley, 1,200 meters, *Schunke 432*.

30. ELAEAGIA Wedd.

Large trees with opposite, glabrous, coriaceous leaves; stipules deciduous, glandular within at the base and exuding resin; inflorescence terminal, often large, paniculate; calyx crateriform, the limb persistent, 5-dentate; corolla salverform, small, the 5 lobes ovate, obtuse, imbricate in bud; stamens inserted in the throat of the corolla, the filaments very short, the anthers broad, subexserted; capsule globose, costate, loculicidally dehiscent, 2-celled; seeds numerous, minute, elongate.

Elaeagia Mariae Wedd. *Hist. Nat. Quinq.* 94. 1849.

A tall tree; leaves short-petiolate or almost sessile, the blades oblong or oblong-lanceolate, 8–17 cm. long, obtuse to acute at the

apex, acute or attenuate at the base, coriaceous, glabrous; petioles and branchlets often covered with resin; stipules connate at the base, finally free and truncate; panicles large and many-flowered, much branched, longer than the leaves, the flowers very small; calyx subtruncate; corolla yellowish green, 3 mm. long. Negs. 63, 64.

Puno: Hot forests of the Province of Carabaya, *Weddell*, type (photo. seen ex hb. Berol.).—San Martín: Zepelacio, 1,100 meters, mountain forest, a tree of 8 meters with cream-colored flowers, *Klug* 3635 (determination uncertain). Also in Bolivia.

Weddell reports the vernacular name as "aceite María," and states that the plant was employed in domestic medicine.

31. PHITOPIS Hook. f.

Trees with copious pubescence; stipules caducous; leaves opposite, short-petiolate; inflorescence terminal, cymose or paniculate, the flowers large, 4–7-parted; calyx campanulate or in bud closed and irregularly rupturing; corolla funnelform, the lobes contorted in bud; fruit a 2-celled, loculicidal capsule; seeds numerous, minute, irregular, foveolate.—Only the two following species are known.

Inflorescence cymose, dense, few-flowered, congested; corolla 8–10 mm. long..... *P. multiflora*.

Inflorescence paniculate, large, open, many-flowered; corolla about 17 mm. long..... *P. sterculioides*.

Phitopis multiflora Hook. f. *Icon. Pl. pl. 1093*. 1871. *Hip-potis multiflora* Benth. ex Schum. in Mart. *Fl. Bras. 6*, pt. 6: 244. 1889, in syn.

A tree 8–10 meters high; leaves very shortly petiolate, oblong or obovate-oblong, 8–20 cm. long, short-acuminate, acute to rounded at the base, hispid-pilose; inflorescence sometimes spike-like, usually shorter than the leaves; calyx 7–9 mm. long, the short lobes ovate-triangular, acute; corolla white, glabrous outside; capsule 5 mm. long. Neg. 61.

San Martín: Mountains along Río Mayo, near Tarapoto, *Spruce* 4319, type collection. Moyobamba, *Mathews* 1639. Mt. Campana, near Tarapoto, *Spruce* 4834. Zepelacio, 1,200–1,600 meters, mountain forest, *Klug* 3528.

Phitopis sterculioides Standl. *Field Mus. Bot. 8*: 341. 1931.

A tree 7.5–9 meters high, the branchlets densely fulvous-tomentose and subappressed-hirsute; petioles 2 cm. long; leaf blades oblong-

obovate, about 26 cm. long and 12.5 cm. wide, rounded and shortly produced at the apex, narrowed to the acute base, hirsute; panicle 23 cm. long; calyx densely fulvous-tomentose, 1 cm. long; corolla white, glabrous outside, the lobes rounded-ovate; stamens exserted, the filaments hirsute below the middle.

Junín: Eneñas, 1,600–1,900 meters, in dense forest, *Killip & Smith 25747*, type.

32. OLDENLANDIA L.

Annual or perennial herbs; stipules small, acute or acuminate, sometimes setiferous; leaves opposite, small; flowers small, axillary and terminal, paniculate, cymose, or solitary; calyx 4-parted; corolla rotate or funnelform, the throat usually glabrous, the lobes obtuse, valvate; stamens inserted in the corolla throat, with short filaments, the anthers usually exserted; fruit a small capsule, 2-celled, containing few angulate or subglobose seeds, loculicidally dehiscent.

Flowers in few-flowered cymes.....*O. corymbosa*.

Flowers solitary.....*O. herbacea*.

Oldenlandia corymbosa L. Sp. Pl. 119. 1753.

A slender, branched annual, erect or decumbent, nearly glabrous; stipules bearing 1 or more long bristles; leaves sessile or subsessile, linear or linear-lanceolate, 1–3.5 cm. long, acute to attenuate at base and apex, 1-nerved, scaberulous on the margins; cymes mostly 3-flowered, the flowers long-pedicellate; calyx lobes triangular, acuminate; corolla white or lilac, equaling or slightly longer than the calyx; capsule subglobose, 1.5–2 mm. broad.

Loreto: Mishuyacu, near Iquitos, 100 meters, in clearing, *Klug 1161, 502*. Widely distributed in the tropical regions of both hemispheres.

Oldenlandia herbacea (L.) DC. Prodr. 4: 425. 1830. *Hedyotis herbacea* L. Sp. Pl. 102. 1753.

An erect or procumbent annual, glabrous throughout, usually much branched; leaves sessile, spreading or reflexed, linear or linear-lanceolate, 1.5–7 cm. long, attenuate to each end; pedicels 8–25 mm. long; calyx lobes lanceolate, acuminate; corolla salverform, white, about equaling the calyx; capsule depressed-globose, 2.5–3 mm. long.

Loreto: Caballo-cocha on the Amazon, in clearing, *Williams 2297*. Widely distributed in the tropics of both hemispheres.

33. **ARCYTOPHYLLUM** Willd.

Perennials, woody or suffrutescent, erect or prostrate; stipules entire, bifid, or dentate, sometimes setiform; leaves coriaceous, small, opposite; flowers solitary or arranged in heads or cymes, terminal, usually very small; calyx 4-lobate, the lobes erect, sometimes with minute teeth interposed; corolla funnellform or salverform, the tube short or elongate, the 4 lobes valvate, glabrous or villous within; ovary 2-celled; fruit a small capsule, septicidally dehiscent; seeds few, concavo-convex, punctate.

Plants prostrate, the branches rooting, suffrutescent; flowers solitary *A. filiforme*.

Plants erect, shrubby; flowers solitary, glomerate, or cymose.

Corolla lobes densely short-villous within. Leaves oblong or lance-oblong, 5-8 mm. long, obtuse or acute . . . *A. ciliolatum*.

Corolla lobes glabrous within.

Leaves conspicuously mucronate, oblong to elliptic-oblong, usually 5-7 mm. long *A. setosum*.

Leaves obtuse or acute, not mucronate.

Leaves small, 1-3.5 mm. long; flowers solitary or in few-flowered head-like clusters.

Leaves linear, acute or acuminate; flowers mostly solitary. *A. Riveti*.

Leaves oblong, obtuse; flowers chiefly in few-flowered, terminal, head-like clusters *A. ericoides*.

Leaves larger, 5-15 mm. long; flowers usually in few- or many-flowered cymes.

Stipules almost completely covering the stems; leaves thick and rigid; inflorescence head-like *A. Macbridei*.

Stipules not conspicuous, not covering the stems; leaves relatively thin; inflorescence not head-like.

Corolla 6-8 mm. long *A. thymifolium*.

Corolla 10-12 mm. long *A. Weberbaueri*.

Arcytophyllum ciliolatum Standl. Field Mus. Bot. 4: 324. 1929.

A stout, erect shrub 35 cm. high or more, the branchlets bifariouly puberulent; stipules broadly triangular, entire or obsoletely denticulate, puberulent; leaves sessile or subsessile, glabrous, 1-nerved; flowers terminal, sessile, mostly solitary; calyx lobes 2 mm.

long, subulate-attenuate from a triangular base, ciliate; corolla 8 mm. long, the acuminate lobes equaling the tube; capsule subglobose, 3 mm. long.

Libertad: Mountains near Tayabamba, Prov. Patate, 3,900 meters, Weberbauer 7023, type.—Without locality, Lobb.

Arcytophyllum ericoides (Willd.) Standl. Field Mus. Bot. 11: 182. 1936. *Hedyotis ericoides* Willd. ex R. & S. Syst. Veg. 3: 527. 1819. *Anotis ericoides* DC. Prodr. 4: 433. 1830. *H. thymifolia* var. *ericoides* Wedd. Chlor. And. 2: 44. 1857. *Arcytophyllum parvifolium* Krause, Bot. Jahrb. 40: 313. 1908. *Arcytophyllum virgatum* Standl. Field Mus. Bot. 4: 325. 1929.

An erect, stiff shrub as much as 50 cm. high, rather densely branched, the branchlets minutely puberulent; stipules connate, minutely puberulent, obtuse or acute, often dentate; leaves minute, densely fasciculate, 1–2 mm. long; inflorescences mostly 3–6-flowered, head-like; calyx lobes ovate or triangular, 1–1.5 mm. long, acute; corolla 3.5–5.5 mm. long. Negs. 225, 51.

Amazonas: Prov. Chachapoyas, Mathews 2123, type of *A. virgatum*.—Cajamarca: Below Hacienda La Tahona, near Hualgayoc, in open thickets, 2,600 meters, Weberbauer 4059, type of *A. parvifolium*. Also in Colombia and Ecuador.

I have seen a photograph of the type of *Hedyotis ericoides*, from the Willdenow Herbarium, and it appears to agree perfectly with both the recently described species listed in synonymy. It was collected in the mountains of Colombia by Humboldt and Bonpland.

Arcytophyllum filiforme (R. & P.) Standl. Field Mus. Bot. 11: 183. 1936. *Hedyotis filiformis* R. & P. Fl. 1: 57. pl. 87, f. b. 1798. *H. conferta* R. & P. loc. cit. f. a. 1798. *H. microphylla* HBK. Nov. Gen. & Sp. 3: 389. 1820. *Anotis conferta* DC. Prodr. 4: 431. 1830. *A. filiformis* DC. loc. cit. *A. microphylla* DC. op. cit. 432. 1830. *Anotis Lechleriana* Schlecht. Linnaea 28: 488. 1856. *Ereicocis conferta* et *E. filiformis* Kuntze, Rev. Gen. 1: 281. 1891. *Mallostoma confertum* et *M. filiforme* B. & H. ex Ind. Kew. 2: 150. 1895. *Oldenlandia Lechleriana* B. & H. ex Ind. Kew. 2: 336. 1895. *Arcytophyllum confertum* Standl. Field Mus. Bot. 7: 282. 1931.

Plants prostrate and matted, the branches stout and woody or elongate and almost filiform, glabrous, usually densely leafy; stipules triangular, acute, entire or denticulate; leaves linear-lanceolate or linear, mostly 3–6 mm. long, acute and piliferous at the apex, glabrous, often ciliate; flowers terminal, solitary; calyx lobes subu-

late to linear-oblong, piliferous; corolla white, 8-10 mm. long. Negs. 22, 47, 48, 55.

Apurímac: Hualgayoc and Micuipampa, *Humboldt & Bonpland*; photo. of type of *H. microphylla*.—Cuzco: Piñasniocj, Panticaya Pass, 3,600 meters, *Cook & Gilbert 1302*. Paso de Tres Cruces, *Pennell 13861*.—Huánuco: Pillao, *Ruiz*, type material of *A. filiformis*; the species was reported by R. & P. also from Torrehuasi, Sillicai, and Achapatuma. Playapampa, 2,700 meters, sunny, rocky places, 4502. Six miles south of Mito, 3,150 meters, grassy hills, 1832. Fifteen miles northeast of Huánuco, 3,660 meters, common in wetter grasslands, 2185.—Junín: Oroya, *Kalenborn 44*. *A. conferta* was described from the mountains of Canta and Tarma, near Hacaybamba, Collquihirca, and Mineral del Cerro de Yauricocha.—Puno: Tabina, *Lechler 2091*, type material of *Anotis pilifera*; *Lechler 2101*, type material of *Anotis Lechleriana*. Between Tambo de las Vacas and Muña, *Raimondi 10030*.—Without definite locality, *Weberbauer 6108*. Also in Bolivia and Ecuador.

Although *Hedyotis conferta* and *H. filiformis* were maintained as distinct species by Weddell in the *Chloris Andina*, the characters upon which they were separated do not appear to be trustworthy. I have seen a photograph of presumably authentic material of *H. filiformis* from the Berlin herbarium, and it agrees with the plant described by Weddell as *H. conferta* rather than the one which he describes and illustrates as *H. filiformis*. Ruiz and Pavón give no distinguishing characters in their descriptions of the two species, nor do their illustrations give any clue for determining the differences between what they assumed to be two species of the genus.

Arcytophyllum Macbridei Standl. Field Mus. Bot. 11: 183. 1936.

A densely branched shrub 30 cm. high or more, the stout branches densely covered by the large and conspicuous stipules, these usually with much elongate setae at the apex; leaves sessile, lance-oblong or linear-oblong, 3-11 mm. long, glabrous, rigid, acute, lustrous, scaberulous-ciliate; flowers sessile, congested to form a small, globose, rounded head; sepals erect, acute, 2-3 mm. long, ovate-oblong; corolla 6 mm. long, glabrous outside, the lobes glabrous within; capsule subglobose, 2.5 mm. long.

Without locality: *Weberbauer 6102*, type.—Amazonas: Trail from Chachapoyas to Moyobamba, *Williams 7576*. Tambo de Laurel, between Dunia and Chachapoyas, *Raimondi 1048*.—Cajamarca: Cutervo, *Raimondi 4968, 4679; Jelski 6266*.

Arcytophyllum Riveti Dang. & Cherm. Bull. Mus. Hist. Nat. Paris 28: 434. 1922.

A stiff, erect shrub as much as 40 cm. high, rather densely branched, the branches pale, puberulent; stipules triangular, dentate; leaves revolute, 2–3.5 mm. long, glabrous, spreading or ascending and more or less imbricate; calyx lobes lanceolate, acute; corolla purplish or white, 5–6 mm. long, glabrous.

Amazonas: Chachapoyas, *Mathews* 3129.—Apurímac: Hacienda La Tahona, 3,100–3,400 meters, *Weberbauer* 4024.—Cajamarca: Hacienda Montaña de Nanchó, 2,400 meters, *Raimondi* 5533.—Piura: Below Ayavaca, 2,500 meters, *Weberbauer* 6359. Also in Ecuador.

Arcytophyllum setosum (R. & P.) Standl. Field Mus. Bot. 7: 208. 1931. *Hedyotis setosa* R. & P. Fl. 1: 57. pl. 88, f. a. 1798. *Anotis setosa* DC. Prodr. 4: 432. 1830. *Rachicallis setosa* Steud. Nom. Bot. ed. 2. 2: 249. 1840. *Mallostoma setosum* B. & H. ex Ind. Kew. 2: 150. 1895. *Ereicoclis setosa* Kuntze, Rev. Gen. 1: 281. 1891.

A stout, erect shrub, 60 cm. high or less, glabrous or nearly so, usually densely branched, the branches suberect; stipules ovate, glabrous, bearing several long, stiff, yellowish setae; leaves very thick and leathery, lustrous, spreading or ascending; flowers few, subcapitate at the ends of the branches; calyx lobes triangular-lanceolate, acuminate; corolla 8 mm. long, lilac outside, white within. Neg. 45.

Amazonas: Prov. Chachapoyas, 2,000–2,300 meters, *Weberbauer* 4337.—Ayacucho: Huaicani, 3,300–3,600 meters, *Pearce*.—Cajamarca: Cerro de Hualgayoc, *Raimondi* 2215, 837.—Huánuco: Mito, 2,700 meters, grassy slope, 1808. Fifteen miles northeast of Huánuco, 3,660 meters, wet mossy bank, 2178. Pillao, *Ruiz*, presumably type material.—Junín: Originally described from Churupayana and Huasahuasi, *Ruiz* & *Pavón*.—Piura: Above Huancabamba, 3,400 meters, *Weberbauer* 6079.—Department unknown: Bajasan (?), *Mathews* 1506. Also in Ecuador and Bolivia.

Arcytophyllum thymifolium (R. & P.) Standl. Field Mus. Bot. 7: 40. 1930. *Hedyotis thymifolia* R. & P. Fl. 1: 56. pl. 88, f. a. 1798. *H. juniperifolia* R. & P. op cit. 57. pl. 87, f. c. 1798. *Anotis thymifolia* et *A. juniperifolia* DC. Prodr. 4: 432. 1830. *Mallostoma juniperifolium* et *M. thymifolium* B. & H. ex Ind. Kew. 2: 150. 1895. *Ereicoclis juniperifolia* et *E. thymifolia* Kuntze, Rev. Gen. 1: 281. 1891. *Anotis thymifolia* var. *hyssopifolia* DC. Prodr. 4: 432. 1830, at

least in part. *Arcytophyllum juniperifolium* Standl. Field Mus. Bot. 7: 207. 1931.

An erect, stout, densely branched shrub, sometimes as much as 1 meter high, the branches puberulent; stipules triangular-ovate, 1-3-dentate; leaves linear, usually revolute, spreading or ascending, glabrous; flowers in small, dense or open, terminal cymes, the inflorescences sometimes reduced to 3 flowers; calyx lobes linear-lanceolate; corolla white, glabrous within. Negs. 46, 50, 226.

Amazonas: Chachapoyas, 2,700 meters, *Williams* 7566. Altos entre Balsas y Celendín, *Raimondi* 1801. Chachapoyas, in 1835, *Mathews*; *Mathews* 2124.—Ancash: Andamayo, *Raimondi* 1688. Caraz, 2,200-2,500 meters, *Weberbauer* 3006.—Ayacucho: Coracora, 2,600 meters, *Weberbauer* 5819.—Cajamarca: Cayacati, *Jelski* 379.—Cuzco: Ollantaitambo, 3,000 meters, open, rocky slope, *Pennell* 13651; *Cook & Gilbert* 307, 310, 744. Cuzco, *Rose* 19073. Dept. Cuzco, 1839-40, *Gay*. Lucay, Urubamba Valley, 3,000 meters, *Herrera* 2219. La Máquina, Urubamba Valley, 2,050 meters, *Herrera* 2660. Hacienda Tilque, Urubamba Valley, *Herrera* 1705.—Huánuco: Northwest of Mito, 3,000 meters, rocky, sunny slope, 1927. Huánuco, *Kanehira* 223. Between Huánuco and Pampayacu, *Kanehira* 72.—Junín: *Hedyotis juniperifolia* described from mountains of Tarma and Canta, near Palcamayo, Casacamcha, and Lauricocha, *Ruiz & Pavón*. *H. thymifolia* described from Tarma and Caxatambo, *Ruiz & Pavón*. Between Tarma and Palca, 2,600-3,000 meters, *Weberbauer* 1734. Tarma, 2,100 meters, steep slope in heavy, stony soil, 1012; open hillside, 3,100 meters, *Killip & Smith* 21799. Near Huancayo, 3,400 meters, open, rocky hillside, *Killip & Smith* 22022. Oroya, *Kalenborn* 159. Canta, Tarma, and Jauja, *Mathews* 813.—Lima: Mountains near Chosica, 1,700 meters, *Weberbauer* 5322. Matucana, 2,400 meters, in slide rock, 207. Canta, 2,800 meters, open, rocky slope, *Pennell* 14341, 14595. Puruchuca, *Mathews* 987. Lima et Peruvia septentrionalis, *Cuming* 1009. Between Matucana and Tambo de Viso, 2,500 meters, *Weberbauer* 166. Obrajillo, *Wilkes Exped.*—Department uncertain: Without locality, *McLean*; *Weberbauer* 5497. Huancatango, *Barclay*. Ranging to Colombia.

The vernacular name "pisgopa-chaquín" is reported by Raimondi. The plant varies greatly in the length of the leaves, and also in the size of the corolla. There is some doubt that *Hedyotis juniperifolia* really is synonymous with *Arcytophyllum thymifolium*, for I have seen no authentic material of it. However, judging from the descrip-

tion and illustration, it is only a form with few-flowered inflorescence such as is represented by several of the collections cited above.

Arcytophyllum Weberbaueri Krause, Bot. Jahrb. 54: Beibl. 119: 42. 1916.

An erect, stout shrub, usually less than 50 cm. high, often densely branched, the young branches glabrous; stipules ovate or triangular, acute; leaves linear or lance-linear, 7–16 mm. long, rather thin, sometimes revolute, glabrous; flowers fragrant, in dense or rather open and many-flowered cymes; calyx lobes ovate-lanceolate, acute, 1.5–2 mm. long; corolla white, glabrous. Neg. 53.

Amazonas: Chachapoyas, *Mathews*.—Ancash: Below Ocros, 2,400–2,900 meters, *Weberbauer 2725*. Below Pamparomás, 2,400 meters, *Weberbauer 3194*.—Huancavelica: Between Pampano and Huaitara, 2,100 meters, *Weberbauer 5409*, type. Huaitara, 1,800–2,400 meters, *Pearce*.—Lima: Matucana, 2,400 meters, steep, rocky slope, 267; slide rock slope, 2893. Matucana, *Weberbauer 85*. Valley of Río Rímac, 2,400 meters, in 1882, *R. Ward*. “Lima,” *Ruiz & Pavón*.—Department unknown: Southern Peru, *Pearce 867*.

It is doubtful whether this plant is more than a large-flowered form of *A. thymifolium*.

34. SCHRADERA Vahl

Glabrous, epiphytic trees or shrubs with rooting branches; stipules large, caducous; leaves opposite, coriaceous; inflorescences usually terminal, solitary or clustered, capitate and pedunculate, surrounded by a cup-like involucre; calyx cupular, truncate or obsoletely lobate; corolla salverform, the 5–10 spreading lobes valvate in bud; stamens attached at the middle of the tube, the anthers linear; ovary 2–4-celled; fruit baccate; seeds numerous, minute, suborbicular, compressed.

Schradera subandina Krause, Verh. Bot. Ver. Brandenb. 50: 99. 1908.

A glabrous, epiphytic shrub 50 cm. high; leaves short-petiolate, oblanceolate or oblong-oblanceolate, 8–12 cm. long, 3–4 cm. wide, acute or acuminate, cuneate at the base; flowers axillary, long-pedicellate, clustered; calyx truncate, 8–12 mm. long; corolla white, the tube 14–16 mm. long, the 5 lobes linear-oblong, slightly shorter than the tube; anthers exserted. Neg. 265.

Loreto: Cerro de Escalera, 1,300 meters, *Ule 6680*, type.

The plant is quite unlike most other species of the genus, and may be referable to some other group.

Schradera umbellata Presl, Bot. Bemerk. 81. 1844.

Glabrous; leaves petiolate, the blades elliptic, abruptly acuminate, acute at the base, 10 cm. long; peduncles terminal, bearing a 4-rayed umbel; flower heads surrounded by an involucre of 4 ovate, obtuse or acutish bracts.

Type from the mountains of Peru.

The plant is referred with doubt to this genus by Presl. I suspect that it may be a species of *Cephaelis*.

35. GONZALAGUNIA R. & P.

Shrubs or small trees, often with recurved or long and more or less pendent branches, the branches terete or nearly so; stipules persistent, sheathing; leaves opposite, short-petiolate or almost sessile; flowers small, in cymes arranged in spike-like inflorescences, often secund, 4-5-parted; calyx cupular, dentate or lobate; corolla salverform or funnelform, the tube often elongate, the lobes imbricate, obtuse; stamens included, inserted in the corolla tube; fruit baccate, 2- or 4-celled, lobate, depressed; seeds numerous, minute, foveolate. Leaves densely white-tomentose beneath, rugose, the veins impressed above.....*G. dependens*.

Leaves green beneath, neither tomentose nor rugose.

Inflorescence very thick and dense, scarcely interrupted; branches pilose with long, spreading hairs.....*G. pachystachya*.

Inflorescence slender and much interrupted; branches strigose or appressed- or ascending-pilose.

Calyx lobes acute or acuminate; leaves small, mostly 1.5-4.5 cm. wide.....*G. cornifolia*.

Calyx lobes obtuse or rounded; leaves large, mostly 6-15 cm. wide.....*G. bunchosioides*.

Gonzalagunia bunchosioides Standl. Field Mus. Bot. 8: 162. 1930.

A shrub, the branches hispid-strigose; stipules 5-8 mm. long, attenuate-acuminate; leaves short-petiolate, thin, the blades ovate to broadly elliptic, 11-26 cm. long, acuminate, acute or obtuse at the base, sparsely hispidulous above, more densely so beneath; panicles

6–30 cm. long pedunculate; calyx lobes ovate or rounded, unequal; corolla white, densely appressed-pilose, the tube 4–5 mm. long, the lobes 2–2.5 mm. long; fruit 4-celled, 3.5–5 mm. wide.

Loreto: Pebas, on the Amazon, in forest, *Williams* 1772, type; also *Nos.* 1597, 1910, 1680, 1756, 1794. Mouth of Río Santiago, upper Marañón, 160 meters, *Tessmann* 4254, 4364. Also in Colombia.

Gonzalagunia cornifolia (HBK.) Standl. Field Mus. Bot. 4: 279. 1929. *Gonzalea cornifolia* HBK. Nov. Gen. & Sp. 3: 416. 1819. *Gonzalagunia panamensis* var. *cornifolia* Schum. in Mart. Fl. Bras. 6, pt. 6: 293. 1889. (?) *G. panamensis* var. *hirsuta* Schum. loc. cit. *G. panamensis* var. *longistipula* Schum. loc. cit.

A slender shrub 2–4.5 meters high with elongate branches, the branchlets densely appressed-pilose or strigose; leaves membranaceous, often almost sessile, lanceolate to ovate, usually 6–13 cm. long, long-acuminate, rounded to acutish at the base, copiously appressed-pilose; panicles spike-like, short or elongate; calyx lobes deltoid to lanceolate; corolla white, 8–10 mm. long, densely appressed-pilose; fruit white. Neg. 270.

Ayacucho: Near Kimpitiriki, 400 meters, in forest, *Killip & Smith* 23043.—Loreto: Fortaleza, *Klug* 2790. Fundo Indiana, Lower Río Nanay, in forest, *Williams* 576, 374, 383, 449, 579, 386, 385, 581, 580. Near Iquitos, common, *Williams* 8227. Balsapuerto, *Killip & Smith* 28450, 28592. Soledad, on Río Itaya, 110 meters, *Killip & Smith* 29679.—San Martín: Lamas, near Tarapoto, *Williams* 6351. Juan Jui, 400 meters, *Klug* 3809. San Roque, in forest, 1,400 meters, *Williams* 7791. Tarapoto, in forest, *Williams* 6316, 6036, 6072, 6098; *Mathews* 1545. Moyobamba, *Mathews* 1618. Ranging to Colombia.

"Bochata," "mullaca." *Gonzalagunia panamensis* var. *hirsuta* was based upon *Spruce* 4863 from Tarapoto, which I have not seen, but probably it is referable here. Var. *longistipula* was based in part upon *Spruce* 3937 from the same locality, which, also, I have not seen, but it is almost certainly synonymous with *G. cornifolia*.

Gonzalagunia dependens R. & P. Fl. 1: 56. pl. 86. 1798. *Gonzalea pendula* Pers. Syn. Pl. 1: 132. 1805. *Gonzalea tomentosa* H. & B. Pl. Aequin. 1: 225. pl. 64. 1808. *Gonzalagunia tomentosa* Kuntze, Rev. Gen. 1: 284. 1891.

A shrub 2–4.5 meters high with elongate and often drooping branches, the branchlets densely whitish-tomentose; leaves short-petiolate, thick, lanceolate or lance-oblong, 8–15 cm. long, long-

acuminate, obtuse or acute at the base, bright green and glabrous above, whitish beneath; inflorescence a long, narrow, spike-like panicle, densely tomentose; calyx lobes very short; corolla pink with white lobes, tomentose, 1 cm. long; fruit 4-celled, purple or red. Neg. 267.

Ayacucho: Carrapa, 1,500 meters, *Killip & Smith 22349, 23227*.—Cuzco: Urubamba Valley, *Weberbauer 5064*.—Huánuco: Chinchao, *Ruiz* (photo. and fragm. of type ex hb. Berol.).—Junín: La Merced, 700 meters, *Killip & Smith 23541*. Dos de Mayo, 1,800 meters, dense forest, *Killip & Smith 25855*. Extending to Colombia and Venezuela.

Gonzalagunia pachystachya Standl. Field Mus. Bot. 11: 213. 1936.

A shrub or tree as much as 6 meters high, the branches densely pilose or hirsute with stiff, spreading hairs; stipules 16–19 mm. long; leaves very shortly petiolate, ovate or oblong-ovate, 13–18 cm. long, narrowly attenuate-acuminate, obtuse or rounded at the base, sparsely short-hirsute above, densely long-pilose especially beneath along the nerves; inflorescence very dense and spike-like, sometimes 3 cm. thick, 15–22 cm. long; hypanthium densely hispidulous; sepals broadly ovate, obtuse, 1–1.5 mm. long; corolla white, hispid, the tube 7 mm. long.

Loreto: Mouth of Río Santiago, Marañón Valley, in upland forest, 160 meters, *Tessmann 4295*, type. Above Pongo de Manseriche, on steep hillside, 300 meters, *Mexia 6215*.

The flowers are white and fragrant, the inflorescences drooping.

36. ISERTIA Schreb.

Shrubs or small trees with thick branches; stipules usually 4 and distinct, glandular within; leaves large, coriaceous, opposite, petiolate, often tomentose beneath; flowers showy, arranged in large, terminal, thyrsoid panicles, usually 6-parted; calyx cupular, truncate or dentate; corolla tubular-funnelform, subcoriaceous, the short lobes imbricate, the tube pubescent in the throat; stamens exserted, the anthers linear; ovary 2–6-celled; fruit baccate, globose, containing numerous small, foveolate seeds.

Leaves glabrous.....*I. rosea*.

Leaves white-tomentose or pubescent beneath.

Corolla glabrous outside.....*I. Krdusei*.

Corolla variously pubescent.

Corolla red and yellow, pubescent with short, more or less spreading hairs.

Corolla tube 2.5–3 cm. long.....*I. Weberbaueri*.

Corolla tube 3.5–4.5 cm. long.....*I. Hoehnei*.

Corolla white, pubescent with fine, appressed hairs.

Venation of the upper leaf surface conspicuously impressed; corolla tube less than 2.5 cm. long.....*I. parvifolia*.

Venation of the upper leaf surface not impressed; corolla tube 3–3.5 cm. long.....*I. alba*.

Isertia alba Sprague, Trans. Bot. Soc. Edinb. 22: 434. 1905.
Creatantha peruviana Standl. Field Mus. Bot. 8: 344. 1931.

A shrub or tree, sometimes as much as 9 meters high; leaves long-petiolate, membranaceous, the blades obovate to broadly elliptic, 20–30 cm. long or larger, abruptly acuminate or cuspidate-acuminate, acute at the base, covered beneath with a very fine and close, white or grayish tomentum; panicles large and dense; corolla slender, white, very closely and usually sparsely sericeous, sometimes glabrate; fruit globose, red, 1 cm. in diameter.

Junín: Puerto Yessup, 400 meters, edge of woods, *Killip & Smith 26331*, type of *Creatantha peruviana*. Pichis Trail, Santa Rosa, 625–900 meters, *Killip & Smith 26202*.—Loreto: Yurimaguas, *Spruce 3878*, type collection; in forest, *Williams 7856*; *Killip & Smith 27966*. Mouth of Río Santiago, *Tessmann 4432*. Fortaleza, 200 meters, in forest, *Williams 4418, 4381*; *Klug 2792*. Sachachoro, 180 meters, in cut-over woods, *Mexia 6086, 6086a*. Colombia. “Asaquiroy,” “asaquiru,” “asarquiroy.”

In the original publication of this species, the locality was given erroneously as Colombia, but this was corrected later by Wernham (see Kew Bull. 65. 1914). The plant has been confused with *Isertia hypoleuca* Benth. of the northern coast of South America, which seems not to be represented by Peruvian collections.

When the genus *Creatantha* was published by the writer, there was available very ample material of a single collection. In this all the corollas were uniformly funnelform-campanulate, the tube being nearly or quite obsolete. The flowers appeared to be normal, and there was no reason to doubt that a distinct new genus was represented. Soon after the publication of the genus, the writer received from Berlin a collection of Rubiaceae in which was the *Tessmann*

collection cited above. In that there were found upon the same branch corollas of the type just described and other tubular ones such as are normal for the genus *Isertia*. It seems certain, therefore, that the campanulate corollas are induced by some abnormal condition, probably by insect action, although no proof of insect activity is apparent in the specimens examined.

Isertia Hoehnei Krause, Archiv. Bot. S. Paulo 1: 115. 1925.

A large shrub or small tree; leaves rather long-petiolate, large, broadly obovate or oval, abruptly contracted at the apex and short-acuminate, acute at the base or rounded and abruptly short-decurrent, green and glabrous on the upper surface, covered beneath by a very fine and close, white tomentum; inflorescence large and many-flowered; corolla red and yellow, the tube relatively stout.

Loreto: Pebas on the Amazon, in forest, *Williams 1743*. Caballococha, in forest, *Williams 2200*. Río Putumayo, *Klug 1627*. La Chorrera, *Fox 18*. Also in Colombia.

Isertia Krausei Standl. Field Mus. Bot. 11: 216. 1936.

Branches very stout, glabrous; leaves short-petiolate, the blades coriaceous, oblong or oblanceolate-oblong, large, acuminate, attenuate to the base, glabrous and shining above, short-pilose beneath on the veins and minutely tomentose in the areoles; panicles large, rather dense, pedunculate; corolla 3.5 cm. long, with short lobes and a stout, thick tube.

Libertad: Without locality, *Weberbauer 7066*, type.

Isertia parvifolia Standl. Field Mus. Bot. 4: 278. 1929.

Sometimes a tree of 6 meters, the branchlets densely puberulent; stipules 5–7 mm. long; leaves short-petiolate, the blades coriaceous, oblong to elliptic, 12–25 cm. long, acuminate, acute at the base, glabrous above, densely and minutely white-tomentose beneath; panicles usually only 5–8 cm. long, the flowers sessile or short-pedicellate; corolla tube 22 mm. long, the oval lobes 6–7 mm. long.

Junín: Chanchamayo Valley, 1,500 meters, *Schunke 393*, type. Above San Ramón, 1,300–1,700 meters, *Schunke A27*.—San Martín: Zepelacio, 1,200–1,600 meters, in forest, *Klug 3456*. Río Mayo, *Spruce 4846*.

Isertia rosea Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 284. 1889.

A shrub or small tree, glabrous throughout; leaves slender-petiolate, shining, rather thin, the blades oblanceolate-oblong to

obovate, 12–35 cm. long, acute or acuminate at the apex, sometimes rounded and apiculate, acute or cuneately narrowed at the base; panicles large and dense; corolla rose-purple or “red,” 4 cm. long, with very slender tube; ovary 4-celled; fruit globose, 6 mm. in diameter. Neg. 280.

Loreto: Manfinfa, Alto Río Nanay, river bank, *Williams* 1111. Puerto Corina, Alto Nanay, *Williams* 1159. Iquitos, *Williams* 8239; *Tessmann* 3535. Florida, 180 meters, *Klug* 2269. Also in Brazil, Venezuela, and the Guianas. “Isico-ey” (Huitoto name, *Klug*).

Isertia Weberbaueri Standl. Field Mus. Bot. 4: 277. 1929.

A tree 8 meters high, the branchlets glabrate; stipules 7 mm. long, the lobes obtuse; leaves rather long-petiolate, coriaceous, the blades 19–28 cm. long, glabrous above, densely and minutely white-tomentose beneath, rounded at the apex and abruptly short-acuminate, acute at the base; panicles 25 cm. long; corolla dark red with yellow throat, the tube 27 mm. long, puberulent, the oval lobes 5–6 mm. long.

Libertad: Valley of Río Mixiollo, 1,400 meters, *Weberbauer* 7054, type; 7066.—Loreto: Caballo-cocha, in forest, *Williams* 2071.

37. COCCOCYPSELUM Sw.

Prostrate annual or perennial herbs; leaves opposite, petiolate; flowers small, blue or purple, capitate, the heads axillary, sessile or pedunculate; calyx 4-lobate, the lobes narrow; corolla funnelform, the throat glabrous, the limb 4-lobate, the lobes valvate; stamens inserted in the corolla tube; fruit baccate, ovoid or globose, 2-celled, usually blue; seeds minute, numerous, subangulate, granulate.

Heads few-flowered; leaves glabrous or with sparse, appressed pubescence.

Hypanthium usually glabrous; leaves glabrous or nearly so except for appressed hairs on the upper surface near the margin.

C. Condalia.

Hypanthium appressed-pilose; leaves more or less appressed-pilose beneath over the whole surface. *C. decumbens.*

Heads many-flowered; leaves densely pubescent.

Pubescence of the stems spreading; leaves mostly more or less cordate at the base. *C. hirsutum.*

Pubescence of the stems appressed or ascending; leaves not cordate at the base. *C. lanceolatum.*

Coccocypselum Condalia Pers. Syn. Pl. 1: 132. 1805. *Condalia repens* R. & P. Fl. 1: 54. pl. 84, f. a. 1798, non *Coccocypselum repens* Sw. 1788. *Coccocypselum umbellatum* Poir. Encycl. Suppl. 2: 308. 1811. *C. glabrum* Britton, Bull. Torrey Club 18: 108. 1891, non DC. 1830. *C. Brittoni* Rusby, Bull. N. Y. Bot. Gard. 4: 368. 1907.

A prostrate perennial, nearly glabrous, the stems sometimes sparsely appressed-pilose; leaves short-petiolate, the blades oblong-ovate or oblong, 2.5–6.5 cm. long, acute, acute or obtuse at the base, often purplish beneath and usually quite glabrous; peduncles longer than the petioles, slender; calyx lobes lance-linear, acute or acuminate, about equaling the hypanthium; corolla purple; berry deep blue, usually 6–7 mm. long, glabrous or nearly so.

Huánuco: *Condalia repens* described from Pillao, Cochero, and Chinchao, Ruiz & Pavón.—Junín: Dos de Mayo, 1,800 meters, dense forest, Killip & Smith 25867. East of Quimiri Bridge, near La Merced, 800–1,300 meters, dense forest, Killip & Smith 23856. —San Martín: San Roque, 1,400 meters, in forest, Williams 7113, 6994. Ranging to Paraguay, Brazil, and the Guianas.

Coccocypselum decumbens Krause, Bot. Jahrb. 40: 323. 1908.

A much-branched, prostrate perennial, the stems appressed-pilose with yellowish hairs; leaf blades ovate or oblong-ovate, 2–4.5 cm. long, acute or short-acuminate, rounded or obtuse at the base, thinly appressed-pilose or sometimes glabrate above; heads long-pedunculate, with 3 or more sessile flowers; calyx lobes linear-attenuate, twice as long as the hypanthium; corolla pale blue; berry deep blue or blackish, 5 mm. long. Neg. 261.

Huánuco: Vilcabamba, 1,800 meters, wet banks, 4974.—Puno: Between Tambo Yuncacoya and Tambo Cachicachi, Weberbauer 1141, type.

Probably this is only a variant of *C. Condalia*.

Coccocypselum hirsutum Bartl. ex DC. Prodr. 4: 396. 1830.

Branches densely hirsute or hispid; stipules subulate, 3–6 mm. long; leaf blades oval to rounded-ovate, rounded to acutish at the apex, hirsute or hispid with long, spreading, yellowish hairs; peduncles 1–3 cm. long; calyx lobes linear, acute, 2.5–5 mm. long; corolla 12–14 mm. long, hirsute; fruit hirsute, 6–10 mm. in diameter. "Sapu-quina."

Huánuco: Monsón, Weberbauer 3478.—San Martín: San Roque, 1,400 meters, Williams 7307. Ranging from Bolivia to Mexico and Trinidad.

Coccocypselum lanceolatum (R. & P.) Pers. Syn. Pl. 1: 132. 1805. *Condalia lanceolata* R. & P. Fl. 1: 54. 1798. *Coccocypselum repens* HBK. Nov. Gen. & Sp. 3: 316. 1819, non Sw. 1788. *Coccocypselum canescens* Willd. ex C. & S. Linnaea 4: 139. 1829. *Tontanea canescens* Standl. N. Amer. Fl. 32: 146. 1921.

Plants rather large and much branched, prostrate; stipules linear-subulate, 3–10 mm. long; leaf blades oblong to ovate, 2–8 cm. long, acute or obtuse, obtuse or rounded at the base, densely appressed-pilose on both surfaces with fulvous hairs, or the hairs of the lower surface somewhat spreading; peduncles 1–6 cm. long; calyx lobes oblong or ovate, 2–3 mm. long, obtuse; corolla blue, 5 mm. long, densely pilose; fruit bright blue, densely pilose, 5–7 mm. in diameter.

Ayacucho: Carrapa, 1,000 meters, wooded hillside, *Killip & Smith 22462*.—Huánuco: Described from forests of Cochero and Chinchao, *Ruiz & Pavón*. Vilcabamba, 1,800 meters, steep clay banks, *4973*. La Merced, 1,200 meters, loose soil of open bank, *5762*. Chanchamayo Valley, 1,000–1,500 meters, *Schunke 1463, 1442, 361, 396, 372, 110*. Huacapistana, 1,800–2,400 meters, *Killip & Smith 24132*. Above San Ramón, 1,400 meters, *Schunke A18; Killip & Smith 24559*. Eneñas, 1,700 meters, open sphagnum bog, *Killip & Smith 25697*.—San Martín: Zepelacio, 1,200–1,600 meters, *Klug 3393*. Widely distributed in tropical America, usually at middle elevations.

38. HIPLOTIS R. & P.

Shrubs or small trees; stipules large, caducous; leaves opposite, petiolate, the blades thin; flowers large, solitary or in 2–3-flowered cymes, 5-parted, often somewhat asymmetric; calyx elongate, spathaceous or bilabiate; corolla tubular or funnelform, the short lobes plicate-valvate, the cylindric tube usually curved, glabrous within or pilose at the insertion of the stamens; stamens usually unequal, inserted at or below the middle of the tube, the anthers included; ovary 2-celled; fruit baccate, globose, the seeds numerous, small, foveolate.—Two other species are known, in Colombia and Ecuador.

Calyx bilabiate, the segments not contracted at the apex, 2–3-dentate; corolla glabrous within, the lobes minute. . . . *H. tubiflora*.

Calyx spathaceous or bifid, the lobes contracted and cucullate at the apex; corolla pilose within above the base, the lobes one-fifth to one-fourth as long as the tube.

Peduncles 5-8 cm. long or more..... *H. triflora*.

Peduncles 2 cm. long or less..... *H. brevipes*.

Schumann (in Mart. Fl. Bras. 6, pt. 6: 297. 1889) states that "*H. peruviana* Karst.," in his opinion, is not distinct from *H. albiflora* Karst. This seems to be the only publication of the name *peruviana*. *Hippotis albiflora* is a Colombian species, of which I have seen no Peruvian material.

Hippotis brevipes Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 298. *pl. 133, f. 2.* 1889.

A shrub 1.5-4 meters high or more, the branchlets hispid; stipules ovate-triangular, 1 cm. long; leaves short-petiolate, the blades elliptic-obovate to lance-oblong, 8-20 cm. long, abruptly acuminate, acute at the base, hispid above, rather softly pilose beneath; calyx 2 cm. long, red, hispid; corolla 3 cm. long, densely hispid, the lobes retuse, glabrous within; fruit hispid, 8 mm. in diameter. Neg. 298.

Loreto: Pumayacu, *Klug 3150*. Pongo de Cainarache, *Ule 6377, 6378; Klug 2760*. Balsapuerto, *Killip & Smith 28436*. Mouth of Río Santiago, dense forest, *Meria 6381*.—San Martín: Río Mayo near Tarapoto, *Spruce 4375*, type collection. San Roque, in forest, *Williams 6945, 7619*. Juan Jui, 400 meters, *Klug 3882*.

Hippotis brevipes var. *ucayalina* Huber (Bol. Mus. Goeldi 4: 613. 1906) is described as differing from the type in the slender, longer (5 mm.) pedicels, the less densely hispid calyx and corolla, and the more slender corolla. Apparently it is a form of slight importance. The type is *Huber 1456* from Cerro de Canchahuaya near Tarapoto. It is described as a shrub with scarlet flowers.

Hippotis triflora R. & P. Prodr. 33. 1794; Fl. 2: 56. *pl. 201.* 1799.

A shrub 3-4.5 meters high, the branchlets hispidulous or strigose; stipules broadly oblong, 2 cm. long, subobtuse; leaves on rather short petioles, the blades obovate-oblong to obovate-elliptic, 10-18 cm. long or larger, thin, short-acuminate, acute at the base, densely soft-pilose beneath; inflorescences long-pedunculate, 2-3-flowered, the flowers short-pedicellate; calyx 1.5-2 cm. long, appressed-pilose; corolla 2 cm. long, appressed-pilose, the tube pale pink with cream-colored pubescence, the lobes rich pink; fruit globose, 8 mm. in diameter, appressed-pilose. Neg. 299.

Huánuco: Described from Cochero, Macora, and Marimarchahua, *Ruiz & Pavón*. Cochero, *Dombey*. Pampayacu, *Sawada 25*.—Junín: San Nicolás, 1,100 meters, dense forest, *Killip & Smith*

26000.—Loreto: Balsapuerto, 150–350 meters, *Killip & Smith* 28436.—Without locality: *Poeppig* 1240.

Hippotis tubiflora Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 298. 1889.

Branchlets appressed-pilose; leaves short-petiolate, the blades obovate-lanceolate or lanceolate, 8–10 cm. long, acuminate, attenuate to the base, sericeous or strigose; inflorescence short-pedunculate, 3–5-flowered; calyx 8–9 mm. long, pilose; corolla 3 cm. long, strigose, the lobes truncate and retuse; fruit globose, 1 cm. in diameter, glabrate. Neg. 297.

San Martín: Near Tarapoto, *Spruce* 3949, type collection. Pongo de Cainarachi, 230 meters, in clearing, *Klug* 2621.—Loreto: Balsapuerto, 220 meters, in forest, *Klug* 3084.

Described by Klug as a shrub of 2 meters with bright rose or flesh-red flowers.

39. SOMMERA Schlecht.

Shrubs or small trees; stipules caducous; leaves opposite, petiolate, membranaceous, the areoles between the veinlets finely lineolate; inflorescences axillary, cymose, the flowers 5-parted; calyx deeply lobate, the lobes foliaceous; corolla funnelform, the throat villous, the lobes acute; stamens inserted at the middle of the tube, included: fruit baccate, 2-celled; seeds numerous, small, smooth.

Sommeria sabiceoides Schum. in Mart. Fl. Bras. 6, pt. 6: 300. *pl.* 133, *f.* 1. 1889.

A shrub or small tree, 1–7.5 meters high, the branchlets strigose; stipules 1.5–2 cm. long; leaves slender-petiolate, the blades oblong to obovate, 7–19 cm. long, short-acuminate, acute at the base, glabrous above, more or less strigose or sericeous beneath; cymes pedunculate, shorter than the leaves, few-flowered, the flowers subsessile; calyx lobes lanceolate or oblong, acute or obtuse, green, 9–11 mm. long; corolla white, appressed-pilose, 15–17 mm. long, the lobes 5–6 mm. long; fruit subglobose, about 8 mm. in diameter.

Loreto: Above Pongo de Manseriche, 200 meters, *Mexia* 6133, 6304. La Victoria, on the Amazon, edge of forest, *Williams* 2664, 2862, 2935, 3099. Río Nanay, *Williams* 554. Río Masana, *Williams* 147. Pebas, in forest, *Williams* 1810. Caballo-cocha, in forest, *Williams* 2167, 2076. Mishuyacu, *Klug* 740, 785. Fortaleza, Yurimaguas, *Williams* 4446. Río Huallaga, *Spruce* 1645. Parana Pura, Yurimaguas, *Williams* 4603. Iquitos, edge of forest, *Williams*

8185, 8053; Tessmann 3687; Killip & Smith 27397. Puerto Arturo, Williams 5236. Lower Río Huallaga, 135 meters, Killip & Smith 29254. Río Marañón near mouth of Río Tigre, wooded bank, Killip & Smith 27534. Also in Amazonian Brazil.

40. PENTAGONIA Benth.

Shrubs or trees, branched or often simple; stipules large; leaves ample, entire or pinnatifid, the areoles with numerous fine, parallel striolations; flowers large, in dense, sessile or pedunculate, axillary, trichotomous cymes, 5-6-parted; calyx tubular or spathaceous, persistent; corolla funnelform or tubular, coriaceous, the lobes valvate in bud; stamens inserted below the middle of the tube, the filaments equal or unequal, often villous at the base; fruit baccate, 2-celled, ovoid or globose; seeds numerous, small, angulate.

Leaf blades narrowed to the base, the base itself cordate.

P. subauriculata.

Leaf blades acute or acuminate at the base.

Leaves glabrous or practically so. *P. spathicalyx.*

Leaves densely pubescent beneath.

Leaf blades broadly obovate or oblong-obovate, with about 13 pairs of nerves. *P. velutina.*

Leaf blades narrowly oblong-lanceolate, with 30-36 pairs of nerves.

Corolla glabrous outside; leaves 18 cm. wide. . . *P. Williamsii.*

Corolla pilose; leaves 40-50 cm. wide. *P. gigantifolia.*

Pentagonia peruviana Standl., in spite of its specific name, is actually a plant of Ecuador.

Pentagonia gigantifolia Ducke, Archiv. Jard. Bot. Rio Jan. 5: 181. 1930.

A simple tree 4-5 meters high; stipules lanceolate, 5 cm. long, brownish-tomentose; petioles very short and thick; leaf blades mostly 120-150 cm. long, or as much as 180 cm., long-cuneate at the base and gradually decurrent, acute or short-acuminate, the nerves 32-36 pairs, glabrous above, pilosulous beneath, villous-tomentose on the veins; calyx red, with the hypanthium 4 cm. long, the lobes lanceolate, acuminate, pilose outside, the hypanthium densely villous-tomentose; corolla yellow, 1.5-2 cm. longer than the calyx, the lobes broadly ovate, acuminate.

Loreto: In forest, Indiana, near the Amazon above the mouth of Río Napo, *Ducke 21682*, type.

Dr. Ducke states that this plant has the largest leaves of any dicotyledonous plant with which he is familiar.

Pentagonia spathicalyx Schum. in Mart. Fl. Bras. 6, pt. 6: 302. 1889.

A shrub or tree 1-5 meters high; stipules triangular-lanceolate, 3 cm. long or larger; leaves long-petiolate, coriaceous, the blades oblong-obovate or broadly obovate, 15-45 cm. wide or larger, acuminate, acute at the base; calyx spathaceous, 2 cm. long; bracts red; corolla white or yellowish white, with pink lobes, 3-4 cm. long, pubescent or glabrate; fruit ellipsoid, 2 cm. long. Neg. 6051.

Loreto: Mouth of Río Apaga, *Tessmann 4831*. Mishuyacu, near Río Putumayo, *Klug 1610*. Iquitos, 100 meters, in forest, *Klug 483, 159*. San Antonio, 110 meters, dense forest, *Killip & Smith 29454*. Between Yurimaguas and Balsapuerto, 150 meters, dense forest, *Killip & Smith 28222; Klug 3031*.—San Martín: Pongo de Cainarachi, *Klug 2670*. Also in Amazonian Brazil and Colombia.

Klug describes the flowers as white, rose and white, or yellow and garnet.

Pentagonia subauriculata Standl. Field Mus. Bot. 8: 347. 1931.

A shrub; leaves sessile, elliptic-obovate, 70 cm. long and 30 cm. wide, short-acuminate, appressed-pilose beneath on the veins or glabrate, with about 19 pairs of nerves; bracts red; calyx spathaceous, 2-2.5 cm. long, deeply split along one side, puberulent or glabrate; corolla white, glabrous outside, the tube 3 cm. long, the lobes ovate-triangular, 7 mm. long.

Loreto: Santa Rosa, lower Río Huallaga below Yurimaguas, 135 meters, dense forest, *Killip & Smith 28959*, type.

Pentagonia velutina Standl. Field Mus. Bot. 8: 347. 1931.

A shrub or small tree; leaf blades 40-45 cm. long and 19-25 cm. wide or larger, acute, glabrous above, densely velvety-pilose beneath; fruit globose, 2 cm. in diameter, glabrate; calyx subspathaceous, 1.5-2 cm. long, bilobate, the lobes oblong, acute.

Loreto: Puerto Arturo, Yurimaguas, in forest, 200 meters, *Williams 5280* (type), 5046.

Pentagonia Williamsii Standl. Field Mus. Bot. 8: 167. 1930.

A shrub; leaves very shortly petiolate, the blades 80 cm. long and 16-18 cm. wide or larger, long-acuminate, long-attenuate to the

base, glabrous above, densely spreading-pilose beneath; flowers densely cymose-congested in the leaf axils; calyx 2 cm. long, bilobate to the middle, the segments oblong, obtuse, sparsely pilose or almost glabrous outside; corolla glabrous outside, the tube 2.5-3.2 cm. long, the lobes broadly ovate, acute, 4-5 mm. long.

Loreto: Pebas, on the Amazon, in forest, *Williams 1949*, type.

41. SABICEA Aubl.

Herbs or shrubs, mostly scandent and tomentose or villous; stipules commonly persistent, often broad; leaves opposite, petiolate; flowers chiefly 5-parted, small or medium-sized, in axillary heads or cymes; calyx 3-5-lobate, persistent; corolla funnelform or salverform, the throat pubescent, the lobes valvate in bud; stamens inserted in the tube, with linear anthers; ovary 3-5-celled; fruit baccate; seeds small, numerous, irregular, foveolate.

Leaves densely tomentose and usually white beneath.

Inflorescences pedunculate.....*S. Klugii*.

Inflorescences sessile.

Corolla tube 5 mm. long.....*S. cana*.

Corolla tube 20 mm. long.....*S. amazonensis*.

Leaves not tomentose.

Flowers in dense, sessile, axillary heads.....*S. villosa*.

Flowers in pedunculate heads or cymes.

Pubescence of the stems and leaves of spreading hairs.

Peduncles shorter than the cymes; bracts small, 5 mm. long or less.....*S. Pearcei*.

Peduncles longer than the cymes; bracts 15 mm. long or more.....*S. subinvoluta*.

Pubescence of the stems and leaves appressed.

Bracts at the base of the inflorescence large and conspicuous, more or less connate.....*S. umbellata*.

Bracts small and inconspicuous, not connate..*S. paraensis*.

Sabicea amazonensis Wernham, Monogr. *Sabicea* 47. pl. 5, f. 3, 4. 1914.

A suffrutescent vine, the young stems hirsute; leaves short-petiolate, the blades acuminate, green and long-hirsute above, densely whitish-tomentose and hirsute beneath; flowers in dense,

sessile, axillary heads, subtended by large, involucre-like bracts; calyx lobes linear-lanceolate, 7–9 mm. long; corolla white, the lobes about 4 mm. long.

Loreto: Florida, Río Putumayo, 200 meters, in forest, *Klug 2085*. Also in Amazonian Brazil and Venezuela.

Sabicea cana Hook. Icon. Pl. pl. 247. 1840. *S. flavida* Krause, Bot. Jahrb. 40: 323. 1908.

A scandent shrub with arachnoid-tomentose branches; stipules ovate, subobtusate, 8 mm. long; leaves rather long-petiolate, broadly ovate to elliptic-oblong, acute or acuminate at each end, sparsely arachnoid and greenish above, white beneath; flowers crowded in dense sessile heads, whitish-tomentose; calyx lobes triangular; corolla white, the tube 4–5 mm. long, the lobes 2–3 mm. long; fruit pale violet.

Huánuco: Chicoplaya, *Ruiz & Pavón* (ex Wernham, Monogr. Sabicea 52. 1914).—Junin: Near La Merced, 800–1,300 meters, in forest, *Killip & Smith 23925*.—Loreto: Balsapuerto, *Klug 2882*. Habana, near Moyobamba, 800–900 meters, *Weberbauer 4568*, type of *S. flavida*. Moyobamba, *Mathews*.—San Martín: Cerro de Campana, *Spruce* (ex Wernh. loc. cit.). Also in Colombia.

Sabicea Klugii Standl., sp. nov.

Frutex scandens, ramis dense laxiuscule tomentosis et pilis longis mollibus pilosis, internodiis brevibus vel elongatis; stipulae 5–7 mm. longae late ovatae subobtusae extus dense longipilosae erectae vel subreflexae; folia mediocria breviter petiolata subcoriacea, petiolo crasso dense piloso 5–10 mm. longo; lamina ovata, late ovata vel elliptica 6–10 cm. longa 3.5–5 cm. lata acuta vel subacuminata interdum obtusa, basi acuta ad rotundata, supra dense molliter pilosa et laxe tomentosa, subtus dense laxe sordide tomentosa et praesertim ad nervos longipilosa, nervis lateralibus utroque latere circa 10 valde arcuatis; flores albi capitati numerosi, capitulis subglobosis 2 cm. diam., bracteis inconspicuis, pedunculo crasso dense pilis ochraceis adpresso-piloso usque ad 2.5 cm. longo; sepala 3 mm. longa extus dense pilosa lineari-triangularia versus apicem sensim attenuata; corolla non visa.

San Martín: Zepelacio, near Moyobamba, 1,200–1,600 meters, in clearing, *Klug 3425* (herb. Field Mus. No. 736,762, type).

Sabicea paraensis (Schum.) Wernham, Monogr. Sabicea 31. pl. 12. 1914. *S. umbellata* var. *paraensis* Schum. in Mart. Fl. Bras. 6, pt. 6: 304. 1889.

A scandent shrub with strigose branches; stipules brownish, oblong-ovate, 1 cm. long; leaves short-petiolate, the blades ovate to oblong, acuminate, acute or obtuse at the base, sparsely hirtous above, green and appressed-pilose beneath or glabrate; inflorescence laxly cymose, 4-5 mm. wide; calyx lobes 2-3 mm. long, sub-setaceous; corolla white, sparsely strigose, the tube 1 cm. long, the oblong-linear lobes 2 mm. long; fruit deep red, sparsely strigose.

Loreto: Iquitos, in forest, *Williams* 3635; open swamp, *Killip & Smith* 27210, 26983. La Victoria, on the Amazon, in forest, *Williams* 2566; edge of forest, *Williams* 2907. Mishuyacu, near Iquitos, 100 meters, *Klug* 1040. Peña Blanca, Río Itaya, *Killip & Smith* 29666. Florida, 180 meters, *Klug* 2160. Also in Amazonian Brazil. "Ruicha-o" (Huitoto name).

Sabicea Pearcei Wernham, Monogr. *Sabicea* 38. pl. 3, f. 1. 1914.

A scandent shrub, the branches softly pilose; stipules broadly ovate, 11 mm. long; leaves slender-petiolate, the blades oblong-elliptic, acuminate, acute at the base, spreading-pilose or somewhat hirsute on both surfaces; inflorescence lax, hispidulous, the bracts lanceolate; calyx lobes subetaceous, 4-5 mm. long; fruit white or deep purple.

Junín: Yapas, 1,350-1,600 meters, dense forest, *Killip & Smith* 25598. Also in Bolivia.

Sabicea pumila Bartl. ex DC. Prodr. 4: 440. 1830.

Type from the mountains of Huánuco, *Haenke*. Wernham (Monogr. *Sabicea* 75. 1914) states that he has examined the type in the De Candolle Herbarium. The material, which is very scant, does not represent a *Sabicea*, but is, perhaps, a species of *Hoffmannia*.

Sabicea subinvolucrata Wernham, Monogr. *Sabicea* 38. pl. 3, f. 2, 3. 1914.

A large vine, the branches densely soft-pilose, finally glabrate; leaves short-petiolate, the blades elliptic to oblong, about 10 cm. long and 4.5 cm. wide, long-acuminate, acute at the base, hispidulous above, strigose beneath; stipules broadly ovate, 8-9 mm. long, deflexed; inflorescence lax or dense, many-flowered; calyx lobes linear or linear-lanceolate, 4 mm. long; corolla white, 7-8 mm. long, sparsely strigose.

San Martín: Type collected near Tarapoto, *Spruce* 4370. San Roque, in forest, *Williams* 7106.

Sabicea umbellata (R. & P.) Pers. Syn. Pl. 1: 203. 1805. *Schwenkfelda umbellata* R. & P. Fl. 2: 55. pl. 200, f. a. 1799. *Sabicea umbellata* var. *genuina* Schum. in Mart. Fl. Bras. 6, pt. 6: 304. 1889.

A scandent shrub with strigose or glabrate branches; stipules large, ovate; leaves petiolate, the blades elliptic or ovate, acuminate, strigose on the nerves, at least beneath, elsewhere glabrate; inflorescence lax, many-flowered, the flowers pedicellate; bracts ovate or lanceolate; calyx lobes linear-setaceous, 5 mm. long or more; corolla white, strigose.

Huánuco: Originally described from Cochoero, Macora, and Chinchao, *Ruiz & Pavón* (specimen collected by Ruiz seen, ex hb. Berol.). Cochoero, *Dombey* 561 (ex Wernham).—Without locality: *Mathews* 1951. Wernham reports also *Poeppig* 43 and 1226.

Sabicea villosa R. & S. Syst. Veg. 5: 265. 1819. *S. hirsuta* HBK. Nov. Gen. & Sp. 3: 417. 1820.

A large, herbaceous or suffrutescent vine with hirsute branches; stipules brownish, broadly ovate, reflexed; leaves short-petiolate, the blades elliptic-oblong to ovate, acuminate, hirsute; flowers densely crowded in the leaf axils, sessile; calyx lobes linear-lanceolate; corolla white, strigose, the tube 6 mm. long; fruit oval, purple, 1 cm. long, juicy. "Puchen-mullaca." Neg. 302.

Ayacucho: Prov. Huanta, *Raimondi* 10420.—Huánuco: Pillao, *Ruiz*.—Junín: San Nicolás, 1,100 meters, in forest, *Killip & Smith* 26046.—Loreto: Santa Ana, Río Nanay, *Williams* 1227. Pebas, on the Amazon, in forest, *Williams* 1746. La Victoria, in pasture, *Williams* 2785. Iquitos, *Williams* 1408, 7946; open swamp, *Killip & Smith* 27211.—Puno: Tatanara, *Lechler* 2510 (ex Wernham).—San Martín: San Roque, *Williams* 7469. Tarapoto, *Spruce* 4837 (ex Wernham). Widely distributed in South America, extending northward to Central America.

Sabicea villosa R. & S. var. **adpressa** (Wernham) Standl. Field Mus. Bot. 7: 52. 1930. *S. hirsuta* var. *adpressa* Wernham, Monogr. Sabicea 55. 1914.

Like the species, except that the hairs of the stems and leaves are more or less closely appressed. "Pulma de mullaca."

Loreto: Río Nanay, *Williams* 329, 376, 305. Río Masana, in forest, *Williams* 107. Caballo-cocha, in forest, *Williams* 2203. Ranging with the species.

42. **HOFFMANNIA** Sw.

Herbs or shrubs, simple or branched; stipules interpetiolar, free; leaves opposite or verticillate, petiolate, herbaceous or membranaceous, often marked with cystoliths; inflorescence axillary, few- or many-flowered, usually cymose, the flowers sometimes fasciculate in the leaf axils, 4-parted; calyx short, lobate; corolla salverform or short-funnelform, the lobes imbricate in bud; stamens inserted in the mouth of the corolla, the filaments short; ovary 2-4-celled; fruit baccate, juicy, the seeds numerous, minute.

Leaves glabrous beneath.

Flowers densely fascicled in the leaf axils, sessile or nearly so; leaf blades oblong-oblancheolate. *H. aggregata*.

Flowers in pedunculate cymes, pedicellate; leaf blades elliptic or obovate-elliptic. *H. obovata*.

Leaves variously pubescent beneath, at least along the costa.

Calyx lobes linear, 4-6 mm. long. *H. Mathewsii*.

Calyx lobes broader, less than 2 mm. long.

Flowers densely glomerate in the leaf axils. Leaf blades oblanceolate; stems rufous-villous. *H. Williamsii*.

Flowers in long-pedunculate cymes.

Leaves chiefly ternate, the blades oblanceolate or oblanceolate-oblong, short-petiolate. *H. verticillata*.

Leaves opposite, the blades chiefly elliptic or obovate, long-petiolate.

Cymes about 3-flowered; leaves with conspicuous pale raphids beneath. *H. villosula*.

Cymes several- or many-flowered; leaves without evident raphids beneath. *H. latifolia*.

Hoffmannia aggregata (R. & P.) Schum. in Mart. Fl. Bras. 6, pt. 6: 327. 1889. *Ohigginsia aggregata* R. & P. Fl. 1: 55. pl. 83, f. b. 1798. *Higginsia aggregata* Pers. Syn. Pl. 1: 133. 1805. *Evosmia aggregata* Spreng. Syst. Veg. 1: 417. 1825. (?) *Higginsia angustifolia* Bartl. ex DC. Prodr. 4: 399. 1830.

A shrub 1-3.5 meters high, simple or often branched, the branches glabrous; leaves opposite, short-petiolate, long-acuminate, long-tapering to the base and often almost sessile, paler beneath; calyx lobes linear or lanceolate, 1.5-2.5 mm. long; corolla reddish yellow,

6–7 mm. long, the spreading lobes about as long as the tube; fruit oval or ellipsoid, 5–6 mm. long, reddish or purple. Neg. 372.

Huánuco: Described from Cochoero, Chinchao, and Muña, *Ruiz & Pavón* (photo. and fragm. of authentic material seen, ex hb. Berol.). Casapí, *Mathews* 117. Pampayacu and Cochoero, *Poeppig* 1066, 1029B, 1028B. Río Huallaga Canyon below Río Santo Domingo, 1,200 meters, in forest, 4258. Tambillo, *Jelski* 370. Yanano, 1,800 meters, edge of spring, 4921.—Junín: Chanchamayo Valley, 1,800 meters, *Schunke* 437, 420. Above San Ramón, 1,300–1,700 meters, *Schunke* A23; in forest, *Killip & Smith* 24660.—Without locality: *Haenke*; *Poeppig* Add. 12.

The type of *H. angustifolia* was collected in the mountains of Peru (Huánuco?) by Haenke. I suspect that another synonym of *H. aggregata* is *Condalia sessilis* R. & P. (Fl. 1: 54. 1798; *Coccocypselum sessile* Pers. Syn. Pl. 1: 132. 1805). Although described upon the preceding page of Ruiz and Pavón's work, the descriptions of the two plants are much alike. Certainly the plant can not be a species of *Coccocypselum*.

Hoffmannia latifolia (Bartl.) Kuntze, Rev. Gen. 1: 284. 1891. *Higginsia latifolia* Bartl. ex DC. Prodr. 4: 399. 1830.

A shrub up to 1.8 meters high, or reported, probably incorrectly, as a tree 6 meters high, the young branchlets minutely villosulous or glabrate; leaves large, herbaceous, abruptly acuminate, long-attenuate to the base, ferruginous-villosulous beneath, at least along the veins, paler beneath; cymes equaling or shorter than the petioles, the flowers pedicellate; calyx lobes broadly triangular, obtuse, very short; corolla obtuse in bud, 5 mm. long or more, glabrous outside; fruit white, pink, or wine-colored, broadly ellipsoid, 5 mm. long or more.

Ayacucho: Aina, 750–1,000 meters, dense forest, *Killip & Smith* 22767. Carrapa, 1,500 meters, *Killip & Smith* 22356.—Cajamarca: Tambillo, *Raimondi* 5996.—Huánuco: Type from the mountains of Peru, perhaps from Huánuco, *Haenke*. Pampayacu, *Kanehira* 102.—Junín: Between San Nicolás and Azupizú, 650–900 meters, dense forest, *Killip & Smith* 26106. Also in Bolivia.

Hoffmannia Mathewsii Standl. Field Mus. Bot. 4: 328. 1929.

A branched shrub, the branchlets ferruginous-tomentose; leaves ternate, short-petiolate, the blades elliptic or elliptic-ovate, 3.5–5 cm. long, long-acuminate, narrowed to the base, rusty-villosulous beneath, especially on the veins; cymes long-pedunculate, laxly

few-flowered, the pedicels 3–6 mm. long; corolla 10–11 mm. long, sparsely ferruginous-villosulous, the lobes half as long as the tube.

Amazonas: Chachapoyas, *Mathews*, type.

Hoffmannia obovata (R. & P.) Standl. Field Mus. Bot. 4: 281. 1929. *Ohigginsia obovata* R. & P. Fl. 1: 56. pl. 85, f. b. 1798. *Higginsia obovata* Pers. Syn. Pl. 1: 133. 1805. *Evosmia obovata* Spreng. Syst. Veg. 1: 417. 1825.

A sparsely branched shrub about 1 meter high; leaves opposite, on rather long petioles, the blades short-acuminate, attenuate to the base; cymes few-flowered, almost equaling the petioles, usually clustered, the flowers pedicellate; calyx lobes short; corolla flesh-colored, obtuse in bud, the tube short; fruits oblong, purple. Neg. 371.

Huánuco: Type from Muña, *Ruiz & Pavón* (photo. of authentic specimen seen, ex hb. Berol.).

It is probable that a synonym of this, or at least a closely related species, is *Condalia obovata* R. & P. (Fl. 1: 54. 1798; *Coccocypselum obovatum* Pers. Syn. Pl. 1: 132. 1805), which was described from Chinchao. The descriptions of the two plants certainly are strikingly similar.

Hoffmannia verticillata (R. & P.) Standl. Field Mus. Bot. 4: 281. 1929. *Ohigginsia verticillata* R. & P. Fl. 1: 55. pl. 85, f. a. 1798. *Higginsia verticillata* Pers. Syn. Pl. 1: 133. 1805. *Evosmia verticillata* Spreng. Syst. Veg. 1: 417. 1825.

A slender, branched shrub 1–3 meters high, the branches sparsely villous; leaves small, the blades acuminate, attenuate to the base and often almost sessile, glabrous above, puberulent or villosulous beneath along the veins; cymes mostly 3-flowered, on long, slender peduncles, usually much longer than the petioles; corolla red, 5–6 mm. long, glabrous or nearly so, the lobes shorter than the tube; fruit pink, 6–7 mm. long. Neg. 369.

Huánuco: Type from forests of Muña, *Ruiz & Pavón* (photo. seen of authentic specimen, ex hb. Berol.). Haucachi, 1,950 meters, bamboo thicket, 4164. Muña, 1,800–2,400 meters, May, 1863, *Pearce*; in damp woods, 2,700 meters, *Pearce 138, 126*.—Junín: Carrapa, 2,700–3,200 meters, edge of forest, *Killip & Smith 24459*.

Hoffmannia villosula Standl. Field Mus. Bot. 8: 167. 1930.

A shrub 1 meter high or less, apparently simple, the young branchlets sparsely villosulous; leaf blades thin, 9–15 cm. long,

long-acuminate, acute or attenuate at the base; cymes shorter than the petioles; calyx lobes linear-attenuate, 1.2 mm. long; fruit pink or red, oval, 6–7 mm. long.

Junín: Above San Ramón, 1,400–1,700 meters, dense forest, *Killip & Smith 24817* (type), *24544*.—Huánuco: Moist forest, Cochero, *Poeppig 1445*.

Hoffmannia Williamsii Standl. Field Mus. Bot. 11: 215. 1936.

Leaves slender-petiolate, the blades thin, 8–13 cm. long, long-acuminate, long-attenuate to the base, copiously rusty-villous beneath, especially on the veins; flowers densely clustered in the leaf axils, sessile or nearly so; calyx lobes very short; fruit ellipsoid, 4–5 mm. long, glabrate.

San Martín: San Roque, 1,400 meters, edge of trail, *Williams 7369*, type. Zepelacio, near Moyobamba, in mountain forest, 1,100 meters, *Klug 3759*; flowers cream-colored.

43. *BERTIERA* Aubl.

Slender shrubs or small trees; stipules interpetiolar, narrow, united at the base with the petiole; leaves opposite, short-petiolate, membranaceous; flowers small, in open, terminal panicles, the branches usually dichotomous, the flowers more or less secund, 5-parted; calyx small, cupular, truncate or dentate; corolla funnel-form, the lobes acute, contorted in bud; stamens inserted in the throat of the corolla; fruit baccate, 2-celled, subglobose; seeds numerous, minute, tuberculate.

Ultimate branchlets of the inflorescence short, usually 4–6-flowered; corolla 5–7 mm. long; fruit conspicuously 10-costate.

B. guianensis.

Ultimate branches usually much elongate and 10–20-flowered; corolla 3 mm. long; fruit not costate. *B. parviflora*.

Bertiera guianensis Aubl. Pl. Guian. 180. *pl.* 69. 1775. *Hamelia micrantha* Poepp. ex Schum. in Mart. Fl. Bras. 6, pt. 6: 324. 1889, in syn.

A slender shrub 2–4.5 meters high, the terete branches strigose or glabrate; stipules triangular, acuminate, 5–11 mm. long, erect; leaves short-petiolate, the blades oblong or ovate-oblong, 8–18 cm. long, acuminate, obtuse or acute at the base, sparsely appressed-pilose, at least on the veins; panicles narrow, 10–20 cm. long; calyx lobes triangular; corolla white or greenish white, strigose, the lobes

much shorter than the tube; fruit depressed-globose, 4 mm. broad, deep blue to almost black.

Loreto: Iquitos, 120 meters, *Williams* 7944; *Killip & Smith* 27128. Punchana, in forest, *Williams* 3758. Mishuyacu, 100 meters, in forest, *Klug* 212. Parana Pura, Yurimaguas, in forest, *Williams* 4624. Fortaleza, 140 meters, in forest, *Klug* 2828. Florida, 180 meters, in forest, *Klug* 2164. Yurimaguas, edge of forest, *Williams* 4121. Between Yurimaguas and Balsapuerto, 140 meters, *Killip & Smith* 28373, 28246. Yurimaguas, *Killip & Smith* 29111. Pebas, on the Amazon, *Williams* 1784, 1776. Caballo-cocha, on the Amazon, *Williams* 2045, 2041.—San Martín: Tarapoto, 750 meters, *Williams* 6117, 6676. Widely distributed in tropical America. "Ruicha-ey" (Huitoto name).

Bertiera parviflora Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 325. 1889.

A shrub 1.5–4.5 meters high, the branches appressed-pilose; leaves short-petiolate, the blades lanceolate or lance-oblong, 12–20 cm. long, long-acuminate, acute at the base, appressed-pilose beneath on the veins; inflorescence 10–20 cm. long, long-pedunculate, the branches slender, often much elongate, the flowers on very short pedicels; calyx lobes triangular-ovate; corolla white, sparsely and minutely pilose outside, the lobes much shorter than the tube; fruit blue or dark purple, 3 mm. broad. "Mullaca grande." Neg. 2774.

Loreto: Santa Rosa, 700 meters, in dense forest, *Killip & Smith* 26193. Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26477. Pongo de Manseriche, *Mexia* 6358. Puerto Yessup, 400 meters, dense forest, *Killip & Smith* 26233.—Loreto: San Antonio, Alto Río Itaya, *Williams* 3442. Lower Río Huallaga, 200 meters, *Williams* 3862. Pebas, on the Amazon, in forest, *Williams* 1725. San Antonio, Río Itaya, *Killip & Smith* 29532. Mishuyacu, *Klug* 577. Caballo-cocha, on the Amazon, *Williams* 2324, 2253. Pinto-cocha, on the Amazon, *Williams* 817. Iquitos, *Killip & Smith* 27271. Yurimaguas, 135 meters, *Killip & Smith* 29059. Also in the Amazon Valley of Brazil.

44. *HAMELIA* Jacq.

Shrubs or small trees with opposite or verticillate leaves; stipules inconspicuous, finally deciduous; flowers rather small, often conspicuously secund, arranged in cymes, 5-parted; calyx short or deeply lobate; corolla tubular or funnelform and ventricose, red or yellow,

the lobes imbricate in bud; stamens adnate at base to the corolla tube, the linear anthers more or less exserted; ovary 5-celled; fruit baccate, juicy, containing many minute, foveolate seeds.

Corolla tubular, orange-red; leaves usually conspicuously pubescent beneath, mostly ternate..... *H. patens*.

Corolla much widened above, yellow or yellow and red; leaves glabrous or nearly so.

Leaves chiefly ternate; corolla 2.5 cm. long..... *H. Klugii*.

Leaves opposite; corolla 1 cm. long..... *H. lutea*.

***Hamelia Klugii* Standl., sp. nov.**

Arbor 8-metralis, ramis gracilibus minute puberulis, internodiis brevibus, stipulis minutis; folia ternata parva petiolata papyracea, petiolo gracili ad 12 mm. longo; lamina lanceolato-oblonga vel oblongo-oblancheolata 4.5–9 cm. longa 1.5–3 cm. lata subabrupte anguste longiacuminata, basin versus longe attenuata, in sicco fusca, sublucida, supra glabra, subtus ubique minute papillosa, in axillis nervorum minute barbata, aliter glabra; flores ut videtur axillares vel terminales et fasciculati pauci, pedicellis gracilibus ad 14 mm. longis minute puberulis; hypanthium oblongum 5 mm. longum minute puberulum, sepalis lineari-oblongis obtusis viridibus 4–5 mm. longis; corolla “rubra et lutea” ventricosa extus sparse minute puberula 2.5 cm. longa, tubo 5–6 mm. tantum longo supra basin constricto, fauce corollae 1 cm. lato; antherae lineares apice exsertae 1.5 cm. longae; baccae immaturae oblongae 12 mm. longae fere glabrae.

San Martín: Zepelacio, near Moyobamba, 1,100 meters, in mountain forest, *Klug 3664* (herb. Field Mus. No. 752,938, type).

The species is an exceptionally distinct one because of its combination of ventricose corolla and ternate leaves.

***Hamelia lutea* Rohr ex Smith in Rees, Cycl. 5: 17. 1811.**

A slender shrub 2.5–3.5 meters high; stipules 3–4 mm. long; leaves long-petiolate, membranaceous, the blades elliptic to ovate or ovate-oblong, usually 6–15 cm. long, acuminate, nearly glabrous, barbellate beneath along the costa; cymes terminal, many-flowered; calyx lobes short, triangular-subulate; corolla 1 cm. long, glabrous; fruit oblong, 6–8 mm. long. “Jutó blanco.”

Amazonas: Mouth of Río Santiago, *Tessmann 3986*.—Loreto: Puerto Arturo, in forest, *Williams 5159, 5179, 4974, 5013; Killip & Smith 27721*. Fortaleza, Yurimaguas, edge of forest, *Williams*

4399. Portal, Río Huallaga, 135 meters, *Killip & Smith 29251*. Between Yurimaguas and Balsapuerto, 150 meters, dense forest, *Killip & Smith 28358*. Santa Rosa, 135 meters, in forest, *Killip & Smith 28735*.—San Martín: Pongo de Cainarachi, *Klug 2753*. Juan Jui, 230 meters, *Klug 2753*. Rumizapa, near Tarapoto, *Williams 6760*. Tarapoto, *Spruce 4231*; *Williams 6301*. Río Mayo, Tarapoto, in forest, *Williams 6365, 6263*. Widely distributed in tropical America, ranging from Bolivia northward.

Hamelia patens Jacq. Enum. Pl. Carib. 16. 1760. *H. erecta* Jacq. loc. cit. *H. sphaerocarpa* R. & P. Fl. 2: 69. pl. 221, f. b. 1799.

A shrub 1-4.5 meters high; stipules triangular, 2-4 mm. long; leaves long-petiolate, membranaceous, the blades oblong-lanceolate to ovate or broadly elliptic, mostly 8-14 cm. long, acute or acuminate, acute at the base, usually copiously short-pilose beneath; sepals broadly triangular, acute, 1 mm. long or less; corolla usually orange-red, minutely puberulent, 1-1.5 cm. long; fruit oval to subglobose, about 5-7 mm. long, red to purple or almost black.

Amazonas: Chachapoyas, *Mathews*.—Ayacucho: Aina, 750-1,000 meters, open woods, *Killip & Smith 22844, 22721*.—Cuzco: Valle Lares, *Diehl 2501d*.—Huánuco: Pampayacu, *Kanehira 197*. Posuso, 600 meters, *4679*. La Merced, edge of forest, 600 meters, *5417, 5416*.—Junín: Colonia Perené, 680 meters, *Killip & Smith 24966*. La Merced, 700 meters, in thickets, *Killip & Smith 23814, 23785*. Río Pinedo, 800 meters, thickets, *Killip & Smith 23574*.—Loreto: Iquitos, edge of forest, *Williams 3686, 1404, 1435*; *Killip & Smith 27132*. Puerto Arturo, abandoned lands, *Williams 5161*; in pasture, *Williams 5188*. Florida, *Klug 2062, 2219*. Río Putumayo, *Klug 1645*. Santa Rosa, in forest, *Williams 4785*. Pebas, in forest, *Williams 1775*. Mishuyacu, 100 meters, in clearing, *Klug 521, 671*. Recreo, Yurimaguas, in forest, *Williams 4159*. Balsapuerto, *Klug 2928*. Río Marañón Valley, 150 meters, dense forest, *Killip & Smith 29144*.—San Martín: Zepelacio, 1,200 meters, *Klug 3302*. Tarapoto, *Williams 5499*; *Spruce 4188*. Lamas, *Williams 6336*. Salavera, San Roque, in forest, *Williams 7803*.—Without locality: *Mathews 3135*. Generally distributed in tropical America; a frequent weed in cut-over land or second growth. Ranging northward to Florida. "Usiya-ey" (Huitoto name).

Hamelia sphaerocarpa, described from Chinchao, is maintained as a distinct species by Wernham (Journ. Bot. 49: 213. 1911), but it seems to differ only in having spherical rather than ellipsoid fruit, and is scarcely to be regarded as more than a minor variant.

45. **BOTHRIOSPORIA** Hook. f.

Trees or shrubs with terete branchlets; stipules free, caducous; leaves opposite, petiolate; flowers small, 4-6-parted, arranged in terminal, opposite-branched panicles, short-pedicellate; calyx divided into 4-5 lobes; corolla short-funnelform or subrotate, the lobes contorted or imbricate in bud, reflexed, pubescent outside; stamens exserted; fruit baccate, subglobose, 4-5-celled; seeds numerous.

Bothriospora corymbosa (Benth.) Hook. f. Icon. Pl. 11: 55. *pl.* 1069. 1870; Schum. in Mart. Fl. Bras. 6, pt. 6: 329. *pl.* 139. 1889. *Evosmia corymbosa* Benth. in Hook. Journ. Bot. 3: 218. 1841.

Branches slender, glabrous; stipules 1 cm. long; leaves slender-petiolate, the blades oblong-ovate, 4-9 cm. long, acutish, obtuse at the base, glabrous; panicles pedunculate, corymbiform, 4-6.5 cm. long, lax; calyx lobes oblong, obtuse; corolla white, 5-6 mm. long, the lobes obtuse; fruit yellow, 3-5 mm. in diameter.

Loreto: Río Itaya, *Williams* 118, 119. Río Itaya, 100 meters, on inundated bank, *Mexia* 6483, 6486. Florida, dense forest, 180 meters, *Klug* 2168. Also in Amazonian Brazil and in British Guiana. "Junuisico-ey" (Huitoto name).

Schumann compares the foliage to that of the pear, and the comparison is an apt one. According to Schomburgk, who collected the original specimens in British Guiana, the wood is considered by the Indians to be poisonous, and some of them had been poisoned by using spits made from it for roasting meat over the fire. Recent collectors describe the plant as a tree of 4-8 meters, with wide-spreading branches and thick foliage, the flowers white and slightly fragrant.

46. **POSOQUERIA** Aubl.

Shrubs or trees; stipules subulate or foliaceous, glandular within; leaves opposite, petiolate, commonly coriaceous; flowers large and showy, terminal, cymose-corymbose or umbellate, 5-parted; calyx lobate, the segments more or less auriculate at the base; corolla funnelform or salverform, curved in bud, the lobes unequal, the tube much elongate and slender, glabrous within; stamens unequal, inserted in the mouth of the corolla, the anthers linear; fruit large, baccate, 2-celled; seeds numerous, large, irregular.

Corolla commonly 10-17 cm. long; leaf blades ovate-oblong to broadly ovate, short-acuminate. *P. latifolia*.
Corolla 24-27 cm. long; leaf blades oblong or narrowly oblong, long-acuminate. *P. longiflora*.

Posoqueria latifolia (Rudge) R. & S. Syst. Veg. 5: 227. 1819.
Solena latifolia Rudge, Pl. Guian. 1: 26. 1806.

A glabrous tree 5–15 meters high, or sometimes only a shrub; stipules triangular and 5–10 mm. long, or sometimes foliaceous and much larger; leaf blades coriaceous, 10–20 cm. long, acute to subcordate at the base; inflorescence corymbiform, few- or many-flowered, dense, the flowers fragrant; calyx lobes ovate-triangular, acute or subobtusate; corolla white, the lobes lance-oblong, obtuse, 1.5–2 cm. long; fruit globose, about 3 cm. in diameter.

Loreto: Manfinsa, Río Nanay, in forest, *Williams* 1125. Río Nanay, in forest, *Williams* 852. Timbuchi, *Williams* 998. La Victoria, *Williams* 2533, 2874. Mainas, *Poeppig* 2067. Fortaleza, Yurimaguas, edge of forest, *Williams* 4245. San Antonio, *Killip & Smith* 29472. Santa Rosa, 135 meters, *Killip & Smith* 28979. Mishuyacu, *Klug* 963.—San Martín: Tarapoto, *Williams* 6532, 6701, 6545, 6540. Widely distributed in tropical America.

The fruit is sometimes eaten, but its flavor is not attractive. The tree is an exceptionally handsome one when in blossom.

Posoqueria longiflora Aubl. Pl. Guian. 134. pl. 51. 1775.

A tall shrub or small tree, glabrous throughout; stipules subulate, 7–9 mm. long; leaves short-petiolate, 10–20 cm. long, usually acute at the base; inflorescence few-flowered and umbel-like; calyx lobes triangular-ovate, acute; corolla white, the lobes linear-lanceolate, acute or subobtusate, reflexed, 3–5 cm. long; fruit subglobose, yellow, 6–8 cm. in diameter.

Loreto: Iquitos, 100 meters, *Mexia* 6509. Río Masana, *Williams* 28, 168. Mishuyacu, 100 meters, *Klug* 1224. Yurimaguas, *Poeppig* 1809.—San Martín: Tarapoto, in forest, *Williams* 6101; *Spruce* 4571. Also in Brazil, Colombia, and the Guianas.

The flowers are pendent, as in most other species of the genus.

47. TOCOYENA Aubl.

Unarmed shrubs or small trees; stipules chiefly caducous, glandular within; leaves opposite, petiolate, usually herbaceous; flowers large and showy, terminal, cymose, perfect, 4–6-parted; calyx cupular, dentate, glandular within; corolla funnelform or salverform, the tube greatly elongate and slender, glabrous or pubescent in the throat, the lobes obtuse or acute, contorted; stamens sessile in the corolla throat; fruit baccate, globose or oblong, 2-celled; seeds numerous, compressed, horizontal.

Leaf blades 3–7.5 cm. wide.....*T. amazonica*.

Leaf blades mostly 10–16 cm. wide.

Corolla lobes obtuse, 12 mm. long.....*T. Williamsii*.

Corolla lobes acuminate, 25–30 mm. long or more....*T. foetida*.

Tocoyena amazonica Standl. Field Mus. Bot. 8: 350. 1931.

A shrub, the branchlets puberulent or glabrate; leaves short-petiolate, membranaceous, the blades elliptic-oblong or oblanceolate-oblong, 11–21 cm. long, minutely puberulent beneath on the veins or glabrate; flowers fasciculate, few, pedicellate; calyx 4 mm. long, the teeth broadly triangular, acute; fruit globose, 2 cm. in diameter.

Loreto: Río Masana, *Williams 21*, type. Pebas, on the Amazon, in forest, *Williams 1811*.

It is doubtful whether this is distinct from *T. foetida*, but the question can not be settled until the flowers have been collected.

Tocoyena foetida P. & E. Nov. Gen. & Sp. 3: 25. *pl. 229*. 1845. *Posoqueria speciosa* Krause, Bot. Jahrb. 40: 137. 1907, nomen; Verh. Bot. Ver. Brandenb. 50: 104. 1908.

A shrub or small tree, the branchlets appressed-pilose or glabrate; stipules 7–10 mm. long, triangular, acuminate; leaves short-petiolate, blackening when dried (as in other species), the blades oblong-lanceolate to elliptic or ovate, 20–35 cm. long or larger, acuminate, acute at the base, pubescent or glabrate beneath; inflorescence head-like, sessile, few- or many-flowered; calyx 2 mm. long, the teeth subulate; corolla ochroleucous, pubescent, the very slender tube about 18–20 cm. long; fruit ellipsoid, 4.5 cm. long or larger. Neg. 317.

Loreto: La Victoria, on the Amazon, in forest, *Williams 2617*. Pebas, in forest, *Williams 1757*. Iquitos, *Tessmann 3674*. Also in Amazonian Brazil and Venezuela.

Tocoyena Williamsii Standl. Field Mus. Bot. 8: 349. 1931.

A medium-sized tree with glabrous branchlets; leaves short-petiolate, chartaceous, the blades elliptic-obovate, 15–34 cm. long, short-acuminate, cuneate-acute at the base, glabrous; inflorescence cymose, densely many-flowered, short-pedunculate, glabrous, the flowers sessile or short-pedicellate; calyx 2–2.5 mm. long, truncate; corolla tube slender, 9–9.5 cm. long; fruit globose, 7 cm. in diameter.

Loreto: Iquitos, 120 meters, *Williams 8097*, type.—San Martín: Pongo de Cainarachi, 230 meters, in forest, *Klug 2750*; a tree of 20 meters, the flowers golden yellow.

48. SPHINCTANTHUS Benth.

Shrubs or small trees, unarmed; stipules glandular within; leaves opposite, short-petiolate; flowers large, terminal, perfect, 5-6-parted, solitary or in small cymes; calyx deeply dentate; corolla salverform, the oblique lobes about equaling the tube, contorted in bud, the tube indurate at the base, more or less pubescent within; stamens inserted in the corolla throat, sessile, the anthers linear; fruit oblong or globose, 2-celled, baccate; seeds numerous, horizontal, compressed.

Sphinctanthus maculatus Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 356. 1889.

A slender shrub or small tree, 2-4.5 meters high, with glabrous branches; stipules 2-3 mm. long; leaf blades firm-membranaceous, oblong to elliptic or obovate, 10-20 cm. long, acuminate, acute or contracted at the base, glabrous above, barbellate beneath in the axils of the nerves; inflorescence cymose, few-flowered, the flowers pedicellate; hypanthium turbinate; calyx 5-6 mm. long, the lobes subulate; corolla 5-6 cm. long, white, tomentulose, the tube stout, striate, the spreading lobes rhombic, obtuse or acute; fruit orange or yellow, globose, 2-3 cm. in diameter. Neg. 314.

Junín: Cahuapanas, 340 meters, in forest, *Killip & Smith 26729*. — Loreto: Mouth of Río Santiago, *Tessmann 4229*. Huallaga, Yurimaguas, in forest, *Williams 4659*. Puerto Arturo, in pasture, *Williams 5198*. Yurimaguas, *Williams 4730*. Balsapuerto, 200 meters, *Killip & Smith 28645*. Also in Amazonian Brazil.

49. RANDIA L.

Trees or shrubs, often armed with spines; stipules small, often subconnate; leaves opposite, sessile or petiolate; flowers small or large, perfect or unisexual, often dioecious, axillary or terminal, solitary or fasciculate; calyx lobate, dentate, or truncate; corolla funnellform or salverform, with short or elongate tube, the lobes contorted in bud; stamens inserted in the corolla throat, the filaments short or obsolete; fruit baccate, commonly 2-celled, globose or oval; seeds numerous or few, mostly horizontal, compressed.

Plants armed with spines.

Corolla commonly 2-4 cm. long.

Calyx lobes linear or subulate *R. armata*.

Calyx lobes oblong-obovate, foliaceous *R. calycina*.

Corolla less than 1 cm. long.

Leaf blades glabrous or nearly so, elliptic to obovate, mostly 2-3 cm. long..... *R. boliviana*.

Leaf blades densely or sparsely pubescent, sometimes much larger.

Leaf blades orbicular or nearly so, rounded at the apex.

R. rotundifolia.

Leaf blades obovate, acute or acuminate..... *R. obovata*.

Plants unarmed.

Stipules 3 cm. long, persistent, conspicuous..... *R. Tessmannii*.

Stipules small and inconspicuous, deciduous.

Corolla glabrous outside, the tube 20 cm. long... *R. Williamsii*.

Corolla pubescent outside.

Corolla tube 17-25 cm. long..... *R. Ruiziana*.

Corolla tube 2-3 cm. long.

Flowers pedicellate; leaves tomentose beneath.

R. aurantiaca.

Flowers sessile; leaves not tomentose..... *R. Killipii*.

Randia armata (Sw.) DC. Prodr. 4: 387. 1830. *Mussaenda spinosa* Jacq. Sel. Stirp. 70. 1763. *Gardenia armata* Sw. Prodr. 51. 1788. *R. spinosa* Karst. Fl. Columb. 2: 128. 1869, non Poir. 1811. *Basanacantha spinosa* Schum. in Mart. Fl. Bras. 6, pt. 6: 376. 1889.

A shrub or tree 1-6 meters high, armed with stout, sharp spines 1-2.5 cm. long, the spines usually in 4's at the ends of the branchlets; stipules 3-8 mm. long; leaves petiolate, usually membranaceous, the blades ovate to obovate, mostly 5-10 cm. long, acute or acuminate at each end, minutely appressed-pilose beneath on the veins or glabrate; flowers dioecious, pedicellate, clustered; calyx lobes 4-9 mm. long; corolla white or cream-colored, the 5 lobes rhombic-obovate, about 1 cm. long, obtuse; fruit oval or globose, 1-2.5 cm. thick, yellowish or greenish.

Ayacucho: Near Kimpitiriki, 400 meters, in forest, *Killip & Smith 22863*.—Loreto: Puerto Arturo, 200 meters, in forest, *Williams 5165, 5244; Killip & Smith 27904*. Santa Rosa, in forest, *Williams 4859; Killip & Smith 28945*. Above Pongo de Manseriche, 200 meters, *Mezias 6368, 6224*. Soledad, Río Itaya, 110 meters, *Killip & Smith 29708*. Balsapuerto, *Killip & Smith 28449, 28641*.

Upper Marañón, 160 meters, *Tessmann* 4623. Yonán, Lower Huallaga, 130 meters, in forest, *Tessmann* 3772. Schumann reports also *Poeppig* 2355 from Yurimaguas.—San Martín: Juan Jui, *Klug* 3848. Tarapoto, in forest, *Williams* 6700, 6556. Juan Guerra, *Williams* 6918. Morales, Tarapoto, *Williams* 5674; *Spruce* 4246. Río Mayo, near Tarapoto, *Spruce* 4364. Widely distributed in South America; ranging northward to Mexico and the West Indies.

"Espuela casha," "espino," "clavo-caspi." The shrub is abundant in many parts of tropical America, sometimes forming dense thickets. The flowers, although rather large, are inconspicuous, unless borne in unusual abundance. The fruit is filled with a black, slimy pulp of repulsive appearance, which nevertheless is sometimes eaten by people, although of scarcely pleasant flavor. It is much sought by birds, which extract it from a hole punctured in one side of the rind.

Randia armata* var. *pubescens (HBK.) Standl., comb. nov. *Mussaenda pubescens* HBK. Nov. Gen. & Sp. 3: 420. 1820. *Basanacantha spinosa* var. *pubescens* Schum. in Mart. Fl. Bras. 6, pt. 6: 378. 1889.

Like the species, but the leaves softly pubescent, at least beneath, or sometimes subtomentose.

Junín: Colonia Perené, 600 meters, in forest, *Killip & Smith* 25139.—Loreto: Yurimaguas, in forest, *Williams* 4117; *Killip & Smith* 28001. Between Yurimaguas and Balsapuerto, 150 meters, in forest, *Killip & Smith* 28083. Distributed with the species.

This probably is a form of only slight importance, and scarcely deserving of varietal rank.

Randia aurantiaca Standl. Field Mus. Bot. 4: 327. 1929.

A shrub 1-4 meters high; stipules 5-7 mm. long; leaves on short, slender petioles, membranaceous, the blades oblong-elliptic or obovate-elliptic, 4-13 cm. long, short-acuminate, usually acute at the base, pilose or puberulent above, densely tomentose beneath; flowers terminal, solitary or clustered; calyx lobes linear-subulate, 4-5 mm. long; corolla orange, densely sericeous outside, the lobes ovate-oblong, long-acuminate, 2.5 cm. long. Neg. 313.

Túmbes: Mountains east of Hacienda Chicama, 600 meters, *Weberbauer* 7665, type. Also in Ecuador.

Randia boliviana Rusby, Bull. N. Y. Bot. Gard. 4: 368. 1907.

A spiny shrub 2 meters high, or sometimes a tree of 6 meters; leaves short-petiolate, coriaceous, the blades mostly rounded at the

apex but sometimes even acute; flowers few, perfect, inconspicuous; corolla white, glabrous outside, 8 mm. long; fruit globose, 1.5 cm. in diameter.

Cajamarca: Montaña de Nanchó, 2,300 meters, *Raimondi* 7638. —Cuzco: Without definite locality, *Gay*. Also in Bolivia.

Randia calycina Cham. *Linnaea* 9: 246. 1834. *Basanacantha calycina* Schum. in Mart. Fl. Bras. 6, pt. 6: 375. 1889.

A spiny shrub; stipules 4–5 mm. long; leaves petiolate, membranaceous, the blades obovate-oblong to elliptic, nearly glabrous; flowers dioecious, cymose, terminal, short-pedicellate; calyx lobes green, 8–12 mm. long; corolla white, glabrous outside, 2–3 cm. long. Neg. 332.

Junín: La Merced, 1,000 meters, *Weberbauer* 1946. Also in Ecuador and Brazil.

Closely related to *R. armata*, and perhaps better treated as a variety of that species.

Randia Killipii Standl. Field Mus. Bot. 8: 170. 1930.

An unarmed shrub or tree 2.5–9 meters high; stipules ovate-triangular or lance-triangular, 5–10 mm. long; leaves membranaceous, slender-petiolate, the blades elliptic or obovate-elliptic, 11–14 cm. long, acute or short-acuminate, acute or obtuse at the base, puberulent or pilosulous beneath or glabrate; staminate flowers capitate; calyx truncate, 1.5 mm. long; corolla white, puberulent or hirtellous, the tube 3 cm. long, the lobes lance-oblong, 3.5 cm. long, acuminate; fruit globose, 2.5 cm. in diameter.

Junín: Eneñas, 1,600–1,900 meters, dense forest, *Killip & Smith* 25643. —Loreto: San Antonio, Río Itaya, dense forest, 110 meters, *Killip & Smith* 29495, type; *Williams* 3508. Soledad, Río Itaya, *Killip & Smith* 29730, 29716. Paraíso, Alto Itaya, in forest, *Williams* 3372. Also in Colombia.

Randia obovata R. & P. Fl. 2: 68. 1799. *R. pubescens* R. & P. Fl. 2: pl. 220, f. b. 1799. *Gardenia obovata* Dietr. Vollst. Lex. Nachtr. 3: 441. 1821.

A straggling shrub, armed with short or elongate, straight spines; leaves short-petiolate, membranaceous, mostly 3–10 cm. long, acute or attenuate at the base, densely pubescent beneath or in age glabrate; flowers perfect, axillary or lateral, solitary, sessile; corolla white or greenish yellow, 5–6 mm. long; fruit globose, yellowish, 1.5 cm. in diameter. Neg. 324.

Huánuco: Described from Muña, Posuso, and Chinchao, *Ruiz & Pavón*. Vilcabamba, 1,800 meters, forest slope, 5162. Muña, 2,100 meters, dense forest, 4016.—Junín: Vitoc, in 1790, *Tafalla* (photo. and fragm. ex hb. Berol.). Also in Argentina.

The specific name *pubescens*, which was used by De Candolle in the *Prodromus*, appears only on the plate, doubtless as a result of oversight on the part of the authors.

***Randia rotundifolia* R. & P. Fl. 2: 68. 1799.**

A shrub with stout branches, armed with stiff, straight spines; leaf blades thin, mostly orbicular or obovate-rounded and 1–2 cm. long, rounded at the apex, obtuse to cuneate at the base, densely pubescent on both surfaces, or glabrate in age; flowers perfect, terminal, solitary, sessile; corolla small, white; fruit “as large as a filbert,” yellowish, the pulp black. “Millucassa.” Neg. 325.

Junín: Type from Huasahuasi, *Ruiz & Pavón* (photo. of authentic specimen seen, ex hb. Berol.). Below Palca, 2,600 meters, on rocks, *Weberbauer* 1757.

***Randia Ruiziana* DC. Prodr. 4: 388. 1830. *Randia formosa* (Jacq.) Schum. var. *longiflora* (R. & P.) Schum. in Mart. Fl. Bras. 6, pt. 6: 343. 1889. *Gardenia longiflora* R. & P. Fl. 2: 67. pl. 219, f. a. 1799.**

An unarmed shrub or small tree; stipules 2–4 mm. long; leaves short-petiolate, ovate to oblong, acute or acuminate, acute at the base, more or less pilose beneath, membranaceous; flowers perfect, commonly solitary; corolla white, sericeous outside, the narrow lobes long-acuminate, spreading, sometimes as much as 7 cm. long, but usually shorter; fruit oblong or ellipsoid, 5–6 cm. long. Negs. 309, 311.

Huánuco: Posuso and Chacahuassi, *Ruiz & Pavón* (photo. ex hb. Berol.; type from Posuso).—Loreto: Florida, *Klug* 2248, 2272. Pebas, on the Amazon, in forest, *Williams* 1921.—San Martín: Tarapoto, *Williams* 6706, 6551; *Spruce* 4906.—Without locality: *Ruiz & Pavón* 711. Also in Brazil and the Guianas. “Jigu-ey,” “umruyo” (Huitoto names).

“Iscumnim,” “ñupchucuri” (*Ruiz & Pavón*); called “sucena” in Brazil. The pulp of the fruit is edible. The shrub is remarkable for the exaggerated size of its flowers, with long and slender corolla tube.

Randia Tessmannii Standl. Field Mus. Bot. 4: 327. 1929.

An unarmed shrub, or sometimes a tree of 5 meters; stipules oblong-ovate, acute or acuminate, connate at the base, greenish, longer than the petioles; leaves short-petiolate, thick, oblong or oblong-lanceolate, 14–20 cm. long, long-acuminate, obtuse or acute at the base, nearly glabrous; staminate flowers terminal, solitary, short-pedicellate, subtended by large, stipule-like bracts; calyx 1 cm. long, dentate; corolla white, minutely sericeous, the tube 4 cm. long, the 6–7 lobes oblong or obovate, 5–5.5 cm. long, obtuse and acuminate-apiculate; fruit globose, 3 cm. in diameter.

Loreto: Río Ucayali, *Tessmann* 3246, type. Mainas, *Poeppig* 2284. Santa Rosa, in forest, *Williams* 4929. Puerto Arturo, Yurimaguas, in forest and at edge of river, *Williams* 5357, 5249.—San Martín: Juan Jui, 400 meters, *Klug* 3914.—Without locality: *Poeppig* 2284.

Randia Williamsii Standl. Field Mus. Bot. 8: 169. 1930.

A shrub, unarmed; stipules triangular-ovate, 7 mm. long; leaves membranaceous, short-petiolate, the blades narrowly oblong or lance-oblong, 11–23 cm. long, long-acuminate, acute at the base, glabrous; flowers terminal, solitary, sessile; calyx tube 1 cm. long, the 5 lobes filiform, 1.5 cm. long; corolla white, the slender tube glabrous outside, the lobes linear-lanceolate, 6.5 cm. long, long-attenuate; fruit oblong-oval, 5 cm. long, 2.5 cm. thick.

Loreto: La Victoria, on the Amazon, in forest, *Williams* 2538 (type), 2531.

50. **GENIPA** L.

Tall trees; stipules deciduous; leaves rather large, opposite, petiolate, subcoriaceous; flowers large, in terminal, few-flowered cymes, 5–6-parted; calyx tubular, truncate or shallowly lobate; corolla salverform or subrotate, the lobes contorted, coriaceous, the tube short, villous in the upper half; stamens inserted in the mouth of the tube, exserted, the anthers linear; fruit baccate, ovoid or subglobose, 2-celled; seeds horizontal or oblique, large, compressed.

Genipa americana L. Syst. Nat. ed. 10. 931. 1759. *G. oblongifolia* R. & P. Fl. 2: 67. pl. 220, f. a. 1799. *G. excelsa* Krause, Bot. Jahrb. 40: 327. 1908.

A tree 8–30 meters high, glabrous almost throughout; stipules broadly triangular, 8–12 mm. long; leaves short-petiolate, oblong to obovate, 10–35 cm. long, acute or acuminate, acute or attenuate at

the base; calyx 5-8 mm. long; corolla yellowish white, more or less sericeous, 2-4.5 cm. long; fruit brownish, 6-7.5 cm. in diameter.

Junín: La Merced, 1,000 meters, *Weberbauer* 1901, type of *G. excelsa*.—Loreto: Caballo-cocha on the Amazon, in forest, *Williams* 2147. Manfinsa, Alto Río Nanay, *Williams* 1096. La Victoria, on the Amazon, *Williams* 2932. Lower Río Nanay, *Williams* 607. Río Itaya, *Williams* 142. Puerto Arturo, Yurimaguas, *Williams* 4998. Sapote Yacu, Santa Rosa, in pasture, *Williams* 4830. Mishuyacu, *Klug* 690.—San Martín: Pampa Hermosa, *Ruiz & Pavón* (photo. of type of *G. oblongifolia*). San Roque, *Williams* 7379. Widely distributed in tropical America. Negs. 356, 357.

"Jagua," "vito," "yaku-huito," "vitu," "palo colorado. Known in Brazil by the names "jenipapa," "jenipabo," "jenipapo." The wood is strong, resistant, and flexible. *Ruiz* and *Pavón* report that it was employed in Peru for making various utensils, and it is a favorite wood for construction purposes in many parts of tropical America. The pulp of the fruit is edible, but not remarkably palatable. Its dark juice leaves an indelible stain upon every object that it touches. It formerly was much used by the aborigines for painting their bodies, yielding a dark blue or black color, and doubtless it still is employed in the same manner by the uncivilized Indians of the forests along the eastern slopes of the Andes.

So far as I am able to determine, neither *Genipa oblongifolia* nor *G. excelsa* differ in any respect from the typical form of *G. americana*. *Genipa Caruto*, of northern South America, with soft-pubescent leaves, is perhaps best regarded as a distinct species, although it differs little from *G. americana* except in its copious pubescence.

51. GARDENIA Ellis

Shrubs or small trees, usually unarmed; stipules acute or acuminate, triangular; leaves commonly opposite; flowers large, axillary and solitary or rarely terminal or corymbose; calyx tubular, spathaceous, or parted; corolla salverform or funnelform, with elongate tube, usually glabrous in the throat, the lobes 5-9; stamens inserted in the corolla throat, the anthers sessile or subsessile; ovary commonly 1-celled; fruit usually fleshy, baccate, the seeds numerous, horizontal.

Gardenia augusta (L.) Merr. Interp. Herb. Amboin. 485. 1917. *Varneria augusta* L. Amoen. 4: 136. 1759. *G. jasminoides* Ellis, Phil. Trans. 51, pt. 2: 935. 1761. *G. florida* L. Sp. Pl. ed. 2. 305. 1762.

A stout, densely branched shrub, the branchlets scaberulous-puberulent; stipules 1 cm. long; leaves short-petiolate, coriaceous, the blades obovate or oblong-obovate, 4–7.5 cm. long, obtuse or acute, narrowed to the base, almost glabrous; flowers white, large and showy, commonly double in the cultivated forms; calyx lobes foliaceous, triangular-lanceolate, 2–2.5 cm. long.

Loreto (cultivated): Paraíso, Alto Río Itaya, *Williams 3237*. Near Iquitos, *Williams 1509*. Native of southern China.

"Jazmín," "jazmín de cabo." The plant is cultivated generally in tropical regions for its handsome flowers.

52. DUROIA L. f.

Shrubs or trees, unarmed, with thick branchlets; stipules usually united and forming a cap at first, but soon circumscissile or otherwise deciduous; leaves opposite or verticillate, petiolate, chiefly coriaceous; inflorescence terminal; flowers dioecious, usually 6-parted, the staminate clustered or in cymes; calyx cupular or tubular, truncate or lobate; corolla salverform, the lobes contorted in bud; anthers sessile or subsessile at the middle of the corolla tube; pistillate flowers solitary or clustered, terminal; ovary usually 1-celled; fruit large, baccate; seeds rounded-trigonus, compressed, with fibrous-reticulate testa.

Young branches with large, hollow swellings. Leaves and fruit densely hirsute.....*D. hirsuta*.

Young branches slender, not swollen.

Leaves glabrous or nearly so, not hirsute.....*D. longifolia*.

Leaves copiously hirsute on one or both surfaces.

Leaf blades narrowly oblong or oblanceolate-oblong.

D. stenophylla.

Leaf blades elliptic.....*D. trichocarpa*.

Duroia hirsuta (P. & E.) Schum. in Mart. Fl. Bras. 6, pt. 6: 367. 1889. *Amaioua hirsuta* P. & E. Nov. Gen. & Sp. 3: 25. pl. 230. 1845.

A shrub or small tree 3–5 meters high, copiously hirsute throughout; lowest node of each branchlet elongate and fusiform, the upper ones abbreviated; stipules triangular-subulate; leaves short-petiolate, the blades rather thin, obovate to oblong, 10–20 cm. long, acuminate or cuspidate-acuminate, acute at the base; staminate

inflorescence head-like or cymose; calyx lobes linear and elongate; corolla 2.5 cm. long, white, sericeous outside, the lobes longer than the tube; pistillate flowers solitary, cream-colored; fruit ellipsoid, 2-celled, long-hirsute, about 3 cm. long.

Loreto: Forests of Río Nanay, *Williams* 759. San Antonio, Río Itaya, *Williams* 3501. Santa Rosa, in forest, 135 meters, *Killip & Smith* 28947. Mishuyacu, near Iquitos, 100 meters, *Klug* 372. Mouth of Río Santiago, upper Marañón, *Tessmann* 4601. Soledad, Río Itaya, 110 meters, dense forest, *Killip & Smith* 29817. Florida, 180 meters, *Klug* 2289.—Without locality: *Poeppig* 2823. Also in Amazonian Brazil and in Colombia.

"Supai-quinilla," "sacha-run-a-caspi," "supai-caspi," "palo del diablo." The large, inflated nodes of the branches are inhabited by ants.

Duroia longifolia (P. & E.) Schum. in Mart. Fl. Bras. 6, pt. 6: 365. 1889. *Amaioua longifolia* P. & E. Nov. Gen. & Sp. 3: 26. 1845.

A shrub or small tree, the branchlets ferruginous-strigose or glabrate; stipules as much as 3.5 cm. long, lanceolate, acute; leaves short-petiolate, the blades narrowly oblong or oblanceolate-oblong, 10–25 cm. long, acuminate, acute or attenuate at the base, more or less strigose or almost glabrous; staminate inflorescence cymose; calyx lobes linear-subulate; corolla white, about 22 mm. long; pistillate flowers solitary, pedicellate; fruit globose, glabrous, 2 cm. in diameter. Neg. 336.

Loreto: Forest of Paraíso, Alto Río Itaya, *Williams* 3373. Río Masana, *Williams* 162, 30. Also along the upper Amazon in Brazil.

The vernacular name "gurupea" is reported from Brazil.

Duroia stenophylla Standl. Field Mus. Bot. 8: 353. 1931.

A shrub 2 meters high, the branchlets densely fulvous-hirsute; stipules oblong, 2–3 cm. long, obtuse; leaves short-petiolate, opposite, the blades about 17 cm. long, 4–5 cm. wide, caudate-acuminate; staminate inflorescence cymose, pedunculate, rather few-flowered, the flowers pedicellate; calyx lobes linear-subulate, 8 mm. long; corolla sericeous outside, greenish white, the tube 13 mm. long, the linear lobes 23 mm. long.

Loreto: Mishuyacu, near Iquitos, in forest, *Klug* 699, type.

Duroia trichocarpa Standl. Field Mus. Bot. 8: 353. 1931.

A medium-sized tree, the branchlets densely hirsute; leaves opposite, the blades 14–26 cm. long, 7–16 cm. wide, acute and cau-

date-acuminate, hirsute or glabrate above, sparsely hirsute beneath; pistillate flowers densely fasciculate, sessile or subsessile; calyx densely rusty-hirsute, the lobes linear; fruit obovoid-globose, 3 cm. long, densely brown-hirsute.

Loreto: San Antonio, Alto Río Itaya, in forest, *Williams 3470*, type.

53. AMAIOUA Aubl.

Unarmed shrubs or small trees; stipules connate, becoming cleft on one side or irregularly ruptured, finally circumscissile at the base; leaves more or less coriaceous, petiolate, opposite, or ternate; flowers usually 6-parted, dioecious; calyx tubular, the teeth short or elongate; corolla salverform, the lobes equaling or shorter than the tube, oblique, contorted in bud, sericeous outside, the tube constricted at the throat, pubescent within near the base; stamens inserted in the lower part of the tube, the anthers linear, dorsifixed below the middle; fruit baccate, 2-celled; seeds numerous, horizontal, rounded-trigonus.

Young branches with short, spreading hairs, becoming glabrate; corolla 4–5 cm. long. *A. urophylla*.

Young branches sericeous; corolla usually 1.5–2 cm. long.

Lobes of the staminate corolla equaling the tube; leaf blades mostly oblong to oblong-lanceolate. *A. guianensis*.

Lobes of the staminate corolla much shorter than the tube; leaf blades usually broadly elliptic. *A. corymbosa*.

Amaioua corymbosa HBK. Nov. Gen. & Sp. 3: 419. *pl.* 294. 1819. (?) *A. peruviana* Desf. Mém. Mus. Paris 6: 16. *pl.* 4, *f.* B. 1820.

A shrub or small tree; stipules oblong, acute, 1.5 cm. long, sericeous outside; leaves short-petiolate, the blades 6–12.5 cm. long, shortly obtuse-acuminate, short-acuminate at the base, glabrous above, appressed-pilose beneath along the veins or glabrate; staminate inflorescence corymbose, several-flowered; calyx lobes short or minute; corolla 18–20 mm. long, the lobes narrowly lanceolate, sub-falcate; pistillate inflorescence capitate, several-flowered, short-pedunculate, the corolla about 1 cm. long; fruit ellipsoid, glabrate. Neg. 339.

Ranging from Bolivia to the Guianas, Cuba, and Panama. *A. peruviana* was based upon a specimen believed to have been collected in Peru. It is referred doubtfully to the synonymy of *A. corymbosa* by Schumann, in Mart. Fl. Bras. 6, pt. 6: 360. 1889. It is uncertain,

of course, whether the reference is correct, and *A. corymbosa* may not occur in Peru.

Amaioua guianensis Aubl. Pl. Guian. Suppl. 13. *pl.* 375. 1775.

A shrub or tree 2.5-6 meters high; stipules commonly 8-12 mm. long, sericeous outside; leaves short-petiolate, subcoriaceous, the blades 10-20 cm. long, abruptly short-acuminate, acute to attenuate at the base, glabrous above, beneath appressed-pilose or glabrate; staminate inflorescence corymbose, several-flowered, the flowers short-pedicellate; calyx lobes linear-lanceolate; corolla white, about 17 mm. long, the lobes acute, lanceolate; pistillate inflorescence capitate, sessile, usually 5-6-flowered; fruit oblong or ellipsoid, 15-17 mm. long, glabrate, yellowish to deep purple.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 852. Balsapuerto, in dense forest, *Killip & Smith* 28393. Ranging to Brazil and the Guianas.

The fruits are said to be edible.

Amaioua urophylla Standl. Field Mus. Bot. 8: 354. 1931.

A tree 6 meters high; stipules ovate-triangular, 8-12 mm. long; leaves short-petiolate, coriaceous, the blades oblong-elliptic, 10-20 cm. long, caudate-acuminate, acute to rounded at the base, glabrous above, puberulent beneath and appressed-pilose on the veins; staminate inflorescence pedunculate, many-flowered, dense, the flowers sessile or subsessile; calyx teeth short, triangular; corolla white, densely sericeous outside, the lobes linear-oblong-attenuate.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 419, type.

54. ALIBERTIA A. Rich.

Shrubs or small trees, glabrous or pubescent; stipules distinct; flowers dioecious, small or medium-sized, the staminate fasciculate or capitate, the pistillate usually solitary, 4-10-parted; staminate flowers 4-5-parted, the calyx campanulate or tubular, truncate or dentate, the corolla salverform, the lobes contorted in bud, usually more or less oblique, the tube glabrous or puberulent in the throat; stamens inserted on the corolla tube, the filaments short; fruit baccate, globose, 2-5-celled, with fleshy pulp; seeds subcompressed, suborbicular, with subfibrous testa.

Leaves densely pilose beneath. Corolla of staminate flower about 22 mm. long.....*A. claviflora*.

Leaves glabrous.

Corolla of staminate flower about 15 mm. long; calyx with conspicuous, subulate teeth. Corolla lobes acuminate.

A. stenantha.

Corolla 20–25 mm. long; calyx truncate or with minute teeth.

Corolla straight in bud, the lobes acuminate, about equaling the tube; calyx several times as long as the disk. . . . *A. edulis*.

Corolla curved in bud, the lobes obtuse, shorter than the tube; calyx little longer than the disk. *A. curviflora*.

Alibertia claviflora Schum. in Mart. Fl. Bras. 6, pt. 6: 387. 1889.
Cordia claviflora Kuntze, Rev. Gen. 1: 279. 1891.

Stipules ovate-oblong, acuminate, 17–20 mm. long; petioles 8–20 mm. long; leaf blades oblong or oblong-lanceolate, 12–30 cm. long, acuminate or cuspidate, subcoriaceous, glabrous above, soft-pubescent beneath; staminate flowers terminal, about 8-fasciculate; calyx short-pilose outside; corolla sparsely appressed-pilose outside, the lobes acuminate, about equaling the tube. Neg. 22780.

San Martín: Near Tarapoto, *Spruce 4477*, type collection.

Alibertia curviflora Schum. in Mart. Fl. Bras. 6, pt. 6: 387. 1889. *Cordia curviflora* Kuntze, Rev. Gen. Pl. 1: 279. 1891.

Stipules ovate-triangular, 7 mm. long; leaves petiolate, the blade oblong, 12–19 cm. long, shortly obtuse-acuminate, at the base rounded and decurrent, herbaceous; staminate inflorescence about 10-flowered, subtended by 2 large, foliaceous bracts; calyx glabrous; corolla minutely puberulent. Neg. 22781.

San Martín: Type collected along the Río Mayo near Tarapoto, *Spruce 4806*. Amazonian Brazil.

Alibertia edulis (L. Rich.) A. Rich. ex DC. Prodr. 4: 443. 1830.
Genipa edulis L. Rich. Act. Soc. Hist. Nat. Paris 1: 107. 1792.
Cordia edulis Kuntze, Rev. Gen. 1: 279. 1891.

A glabrous shrub or small tree; stipules triangular, acute or acuminate, 6–10 mm. long; leaves short-petiolate, subcoriaceous, the blades lance-oblong to oval-ovate, 6–20 cm. long, usually short-acuminate, acute to rounded at the base; staminate flowers usually 6–8, terminal, sessile; corolla white, sparsely or densely sericeous outside; fruit globose, green or yellowish, about 2.5 cm. in diameter, containing numerous large seeds.

Loreto: Iquitos, *Williams* 8061. La Victoria, on the Amazon, in forest, *Williams* 2921.—San Martín: Juan Guerra, in forest, *Williams* 6869. Tarapoto, 750 meters, *Williams* 6112. Ranging to Brazil and northward to Mexico. Called "puruí" in Brazil.

All the specimens cited above are in fruit only, and their determination is open to question.

Allbertia stenantha Standl. Field Mus. Bot. 8: 170. 1930.

A glabrous shrub; stipules lance-triangular, 7–8 mm. long; leaves short-petiolate, membranaceous, the blades oblong-elliptic or elliptic, 15–20 cm. long, abruptly caudate-acuminate, acute at the base or sometimes rounded and decurrent, minutely barbate beneath in the axils of the nerves; staminate inflorescence terminal, sessile, many-flowered, the flowers short-pedicellate; calyx minutely puberulent or almost glabrous; corolla glabrous outside, densely barbate in the throat; pistillate flowers terminal, solitary; fruit globose, 1.5–2 cm. in diameter.

Loreto: La Victoria, on the Amazon, *Williams* 3117 (type), 2941, 3116, 2833, 2848. San Antonio, on Río Itaya, 110 meters, *Killip & Smith* 29481. Leticia, on the Amazon, in forest, *Williams* 3154, 3163, 3168. Iquitos, *Williams* 8046. Caballo-cocha, in forest, *Williams* 2225. Santa Rosa, 135 meters, in forest, *Killip & Smith* 28831. Amazonian Brazil.

The corollas are described as either yellow or white.

55. *RETINIPHYLLUM* Humb. & Bonpl.

Shrubs or small trees, the branches often exuding resin; stipules persistent, united into a subentire or lobate sheath; leaves opposite, short-petiolate, coriaceous; inflorescences axillary or terminal, spike-like or raceme-like, the flowers sessile or pedicellate, calyculate by 2 bractlets; calyx usually 5-lobate; corolla tubular-salverform, the throat naked, the lobes contorted-imbricate; ovary several-celled, the cells 2-ovulate; fruit fleshy, striate, subglobose, containing 5 nutlets.

Leaves pilose beneath; pedicels 1 cm. long..... *R. fuchsoides*.

Leaves glabrous; pedicels much shorter..... *R. angustiflorum*.

Retiniphyllum angustiflorum Krause, Bot. Jahrb. 40: 326. 1908.

A shrub 2–3 meters high; leaves short-petiolate, glabrous, the blades oblong or elliptic-oblong, long-acuminate, acute at the base,

8–18 cm. long; racemes terminal, pedunculate, with numerous rather evenly distributed flowers; calyx 5-dentate; corolla white, minutely puberulent or glabrate, the tube 2 cm. long, the spreading lobes half as long; fruit ovoid, red, 4–6 mm. long. Neg. 289.

Loreto: Near Rioja, 800–900 meters, *Weberbauer 4695*, type (photo. and fragm. seen, ex hb. Berol.). Mishuyacu, near Iquitos, in forest, 100 meters, *Klug 133*.

Retiniphyllum fuchsioides Krause, Verh. Bot. Ver. Brandenb. 50: 101. 1908.

Said to be a scandent shrub; stipule tube 8–12 mm. long; leaf blades oblong or elliptic-oblong, short-acuminate, acute at the base, sparsely appressed-pilose above, more densely so beneath; racemes long-pedunculate, longer than the leaves, rather evenly many-flowered; calyx lobes triangular, acute; corolla red, glabrate, the tube 2 cm. long; fruit globose, 6–8 mm. in diameter. Neg. 288.

Loreto: Cerro de Escalera, 1,100 meters, *Ule 6544*, type (photo. and fragm. seen, ex hb. Berol.).

56. **MACHAONIA** Humb. & Bonpl.

Shrubs or small trees, often armed with spines; stipules small, triangular; leaves opposite; flowers small, 4–5-parted, arranged in terminal panicles or umbelliform cymes; sepals equal or unequal, persistent; corolla short-funnelform, villous in the throat, the lobes imbricate; stamens inserted in the corolla throat, the filaments short or elongate, the anthers oblong, versatile; fruit dry, laterally compressed, separating into 2 indehiscent, 1-seeded carpels.

Sepals narrowly lanceolate; leaves glabrate beneath. . . . *M. peruviana*.

Sepals broadly ovate or rounded, obtuse or rounded at the apex; leaves densely velvety-pilosulous beneath. . . . *M. Williamsii*.

Machaonia peruviana Wernham, Journ. Bot. 51: 220. 1913.

A shrub with glabrous branches; leaf blades acuminate, hirtellous above, glabrate beneath; flowers in lax, few-flowered panicles; corolla 2.5 mm. long, glabrous outside.

Type said to have been collected in Peru by Pavón; it may have come from Ecuador. Known to the writer only from description.

Machaonia Williamsii Standl. Field Mus. Bot. 8: 357. 1931.

A shrub or small tree, the branchlets densely velutinous-pilosulous; stipules 2.5–3.5 mm. long; leaves petiolate, membranaceous,

the blades oblong-elliptic or ovate-elliptic, 5–9.5 cm. long, acuminate, acute or subobtuse at the base; inflorescence dense and many-flowered, 2.5–10.5 cm. long; corolla glabrous outside, 2.5–3 mm. long; fruit cuneate-obovate, 3 mm. long, puberulent.

San Martín: Juan Guerra, near Tarapoto, *Williams* 6886, type. Río Mayo, Tarapoto, in forest, *Williams* 6255, 6248, 6246, 6256.

57. GUETTARDA L.

Shrubs or small trees, sometimes armed with spines; leaves opposite or ternate, usually coriaceous; inflorescences axillary, frequently dichotomous and with secund flowers; calyx tubular, truncate, persistent; corolla salverform, the lobes imbricate in bud; anthers subsessile, included; ovary 2–9-celled; fruit drupaceous, the endocarp woody or bone-like, surrounded by scant pulp or often almost dry.

Fruit terete, not angled; inflorescence cymose or head-like, not conspicuously dichotomous.

Pubescence of the lower leaf surface of spreading or at least not closely appressed hairs; plants sometimes armed with spines.

Branches hirsute with long, spreading hairs, unarmed.

G. comata.

Branches not hirsute or, if so, the hairs very short, armed with spines.

Spines recurved; leaves short-petiolate. *G. ferox*.

Spines straight; leaves on elongate petioles. *G. boliviana*.

Pubescence of the lower leaf surface of closely appressed hairs; plants unarmed.

Branches of the inflorescence elongate and recurved, the flowers conspicuously secund; leaf blades acute at the base. *G. Ulei*.

Branches of the inflorescence short, erect, the flowers not evidently secund; leaf blades obtuse to subcordate at the base.

G. aromatica.

Fruit angled; inflorescence once furcate, with simple branches.

Pubescence of the lower leaf surface closely appressed.

G. ochreatea.

Pubescence of the lower leaf surface of long, loosely matted hairs.

Fruit 5-celled. *G. hirsuta*.

Fruit 2–3-celled. *G. dependens*.

Guettarda aromatica P. & E. Nov. Gen. & Sp. 3: 27. *pl.*

1845. *G. nitida* Krause, Verh. Bot. Ver. Brandenb. 50: 107. 1908.

A rather slender shrub 2-4 meters high; petioles short or elongate; leaf blades oblong to oblong-elliptic or even broader, mostly 10-18 cm. long, obtuse to short-acuminate, rather thin, glabrate above, thinly sericeous beneath; peduncles equaling or shorter than the leaves, the cymes dense and often head-like, few- or many-flowered; ovary usually 4-celled; corolla white, densely sericeous, the slender tube 20-23 mm. long, the 5 lobes obtuse, 2-4 mm. long. Neg. 389.

Huánuco: Casapí, *Mathews* 1944.—Loreto: Santa Rosa, in forest, *Williams* 4791. Florida, Río Putumayo, 325 meters, *Klug* 2051. Type of *G. aromatica* from Río Huallaga (perhaps in San Martín), *Poeppig*.—San Martín: Tarapoto, *Ule* 6648, type of *G. nitida* (photo. and fragm. seen, ex hb. Berol.). Tarapoto, *Williams* 6627; *Spruce* 4508. Amazonian Brazil.

I have seen no authentic material of *G. aromatica*, but the original description and illustration agree well with the material cited above, and with the type of *G. nitida*.

Guettarda boliviana Standl. Field Mus. Bot. 4: 289. 1929.

A shrub or small tree 3-5.5 meters high; leaves on short or elongate petioles, the blades oblong-elliptic to broadly elliptic, 6-13 cm. long, acute or abruptly acuminate, sparsely appressed-pilose above, pilose beneath with chiefly spreading or at least not closely appressed, brownish hairs; cymes at first dense, in fruit more open, many-flowered, long-pedunculate, often much exceeding the leaves; calyx 1.5-2 mm. long; corolla densely grayish-sericeous, the tube almost 2 cm. long, the lobes 6 mm. long; fruit broadly ellipsoid or subglobose, purple, 1-1.4 cm. long, 4-celled.

Junín: La Merced, 700 meters, *Killip & Smith* 23775. San Ramón, 900-1,300 meters, open hillside, *Killip & Smith* 24783. Also in eastern Bolivia.

There is a possibility that the Peruvian plant may be specifically distinct from the Bolivian, since its flowers are not known.

Guettarda comata Standl., sp. nov.

Arbor 5-metralis, ramulis cinnamomeis pilis longis patentibus brunnescentibus longihirsutis, internodiis brevibus vel elongatis; stipulae 8 mm. longae deciduae brunneae cuspidatae costatae, extus ad costam dense hirsutae; folia mediocria petiolata firme membranacea, petiolo gracili 1-1.5 cm. longo hirsuto; lamina

oblongo-obovata vel lanceolato-ovata 10–12.5 cm. longa 4–5.5 cm. lata longe anguste acuminata vel interdum abrupte cuspidato-acuminata, prope basin paullo angustata, basi ipsa rotundata vel subcordata, supra in sicco brunnescens sparse hirtella, costa venisque prominentibus, sublucida, subtus breviter hirsuta et strigosa, costa gracili elevata, nervis lateralibus utroque latere circa 13 prominentibus obliquis, venulis transversis prominulis laxe reticulatis inconspicuis; inflorescentiae axillares subcapitatae dense pauciflorae, pedunculo gracili 4–9 cm. longo hirsuto, bracteis conspicuis brunneis ovatis vel lanceolatis ad 2 cm. longis hirsutis et longiciliatis; hypanthium vix 1 mm. longum hirsutum; calyx anguste campanulatus 5 mm. longus truncatus minute tomentulosus et adpresso-hirsutus; corolla ochroleuca extus dense pilis longis ochraceis sericea, tubo crassiusculo 18 mm. longo superne paullo dilatato, lobis 6 late oblongis vel ovalibus 5 mm. longis.

Loreto: Fortaleza, near Yurimaguas, 140 meters, in forest, *Klug 2805* (herb. Field Mus. No. 675,994, type).

Guettarda dependens (R. & P.) DC. Prodr. 4: 458. 1830. *Laugeria dependens* R. & P. Fl. 2: 23. pl. 145, f. b. 1799. *G. crispiflora* var. *dependens* Pers. Syn. Pl. 2: 201. 1805.

A tree about 10 meters high with grayish trunk; branchlets ferruginous, pubescent; stipules half as long as the petioles, ovate-lanceolate, acute, deciduous; petioles 1.5–2 cm. long; leaf blades elliptic-ovate, abruptly acuminate, obtuse at the base and abruptly contracted, veiny, somewhat shining above, rusty-tomentose beneath; peduncles equaling or longer than the petioles, the 2 branches short, few-flowered; corolla tomentose outside, 13 mm. long or more, the tube purplish, the lobes white, crispate; drupes small, oblong, 3-celled, rarely 2- or 4-celled. Neg. 395.

Huánuco: Type from Muña, *Ruiz & Pavón*.

I have seen a photograph (ex hb. Berol.) of presumably type material of this species, and so far as may be judged from the photograph, the plant is not specifically distinct from *G. hirsuta*. The original description and illustration agree well with material of *G. hirsuta*, except in the number of cells in the fruit and ovary, and that may well be a variable character.

Guettarda ferox Standl. Field Mus. Bot. 8: 171. 1930.

Probably scandent, the stout spines abruptly recurved, 2–3 cm. long; branchlets velvety-pilose; stipules 8 mm. long, acuminate, deciduous; petiole stout, 6–10 mm. long; leaf blades oblong or

elliptic-oblong, 10–15 cm. long, abruptly short-acuminate, obtuse or narrowly rounded at the base, glabrate above, densely soft-pilose beneath; cymes subcapitate or short-furcate, densely few-flowered, much shorter than the blades, the peduncles 1.5–2 cm. long; fruit oval, 15–18 mm. long, densely brown-tomentose, 4-celled. “Garrabato.”

Loreto: Pinto Cocha, on the Río Nanay, in forest, *Williams* 808, type.

Guettarda hirsuta (R. & P.) Pers. Syn. Pl. 1: 200. 1805. *Laugeria hirsuta* R. & P. Fl. 2: 22. pl. 145, f. a. 1799. *Cordia Poeppigii* DC. Prodr. 9: 492. 1845. *C. tarmensis* Krause, Bot. Jahrb. 37: 630. 1906. *Tournefortiopsis major* Wernham, Journ. Bot. 53: 15. 1915.

A shrub or tree as much as 15 meters high, with densely rusty-tomentose branches; petioles short or much elongate; leaf blades elliptic to elliptic-oblong, mostly 10–20 cm. long but sometimes much larger, abruptly acute or acuminate, acute to attenuate at the base, glabrate above, more or less lustrous and reticulate, beneath densely tomentose; peduncles longer or shorter than the petioles, the branches short or elongate, many-flowered; corolla white, 1 cm. long or more; fruit ovoid or ellipsoid, about 7 mm. long, densely tomentose. Neg. 396.

Cajamarca: Cutervo, *Raimondi* 4472, 4776.—Huánuco: Chinchao, Ruiz (photo. ex hb. Berol., probably type material). Described from Cochoero and Chinchao, Ruiz & Pavón. Puyash, *Sawada* 94.—Junín: Huacapistana, *Weberbauer* 2045 (type of *Cordia tarmensis*). Chanchamayo Valley, 1,200 meters, *Schunke* 287. Above San Ramón, 1,300–1,700 meters, *Schunke* A28.—Libertad: Prov. Pataz, *Weberbauer* 7065. Huayo, *Raimondi*.—San Martín: Zepelacio, 1,100 meters, in forest, *Klug* 3660.—Without locality: *Pavón* 457; *Mathews* 1938. Also in Ecuador.

Tournefortiopsis major was based upon *Poeppig* 1300, from Peru or Brazil, but doubtless from Peru, since the plant is a mountain species, which scarcely would be expected anywhere along the Brazilian Amazon. *Cordia Poeppigii* (of which I have seen a fragment) was collected in subandine Peru by Poeppig.

Guettarda ochreatea Schlecht. Linnaea 28: 496. 1856. *G. pichisensis* Standl. Field Mus. Bot. 8: 172. 1930.

A shrub 3–3.5 meters high, the branchlets griseous-sericeous; stipules brownish, deciduous, 1.5–2 cm. long, acute; leaves long-

petiolate, the blades thin, ovate to lance-oblong, 16-25 cm. long, long-acuminate, attenuate to the base, sericeous above or glabrate; cymes much shorter than the petioles, the peduncles 7-12 mm. long, the branches 1-2 cm. long, 5-7-flowered; fruit 5-6 mm. long, minutely sericeous, 4-celled. Neg. 25659.

Junín: Between San Nicolás and Azupizú, 650-900 meters, dense forest, *Killip & Smith 26104*, type of *G. pichisensis*.—Puno: Sanganbán, *Lechler 2407*, type.

G. pichisensis was described as new before the writer had seen authentic material of *G. ochreatea*, with access only to its description, which is inaccurate and misleading in several details. Examination of a photograph and a fragment of an authentic specimen of *G. ochreatea* leaves little if any doubt that it is identical with *G. pichisensis*.

Guettarda Ulei Krause, Notizbl. Bot. Gart. Berlin 6: 203. 1914.

A tree 6-18 meters high; leaves short-petiolate, the blades ovate-elliptic or ovate-oblong, 3-5 cm. long, obtuse to acuminate, 2-3 cm. wide, pilose beneath, especially on the veins; peduncles slender, equaling or shorter than the leaves, the cymes with few slender, elongate, many-flowered, recurved branches; corolla white, the slender tube 16-18 mm. long. Neg. 388.

Madre de Dios: Seringal Auristella, Alto Río Acre, *Ule 9860*, type (photo. and fragm. seen, ex hb. Berol.). Also in adjacent Brazil.

58. **MALANEA** Aubl.

Shrubs or small trees, often more or less scandent; leaves opposite, short-petiolate; flowers small, 4-parted, arranged in axillary panicles with spike-like branches; calyx short-tubular, truncate or dentate; corolla subcampanulate, the lobes valvate or nearly so; stamens inserted in the corolla throat, short-exserted; ovary 2-celled, the cells 1-ovulate; fruit drupaceous, the endocarp woody or bony, 2-celled or by abortion 1-celled.

Malanea boliviana Standl. Field Mus. Bot. 7: 295. 1931.

A woody vine, the branchlets densely strigillose; stipules deciduous, ovate-oblong, acuminate, 8 mm. long; leaf blades coriaceous, elliptic-oblong, 5-7.5 cm. long, acuminate, acute or obtuse at the base, sparsely strigose above at first but soon glabrate, sparsely strigose beneath; inflorescences longer than the leaves, simple or sparsely branched; calyx obscurely dentate; corolla strigose, ochroleucous, the tube 2.5 mm. long, the obtuse lobes somewhat shorter.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 917*. Iquitos, in forest, *Kuhlmann 22937*. Also in Bolivia.

59. *CHOMELIA* Jacq.

Shrubs or small trees, often armed with spines; stipules interpetiolar, usually persistent; leaves opposite, petiolate; flowers in axillary cymes, sessile; calyx 4-lobate; corolla salverform, the lobes valvate or slightly imbricate, usually much shorter than the tube, bearing near the apex a dorsal, horn-like appendage; anthers subsessile; fruit drupaceous, the large, bony stone 2-celled.

Leaves subcoriaceous, 8–19 cm. long; stipules 6–7 mm. long.

C. unguis-cati.

Leaves firm-membranaceous, 3–5 cm. long; stipules 2.5–3 mm. long.

C. barbellata.

Chomelia barbellata Standl., sp. nov.

Arbor 5-metralis, ramulis rigidis ochraceis primo sparse incurvopilosulis spinis pallidis gracilibus rigidis ad 15 mm. longis armatis, ramulis floriferis abbreviatis et dense foliatis; stipulae anguste triangulari-subulatae 2.5–3 mm. longae persistentes; folia parva firme membranacea breviter petiolata in sicco fusca, petiolo gracili pilosulo ad 5 mm. longo; lamina elliptica vel ovato-elliptica 3–5 cm. longa 1.5–2.5 cm. lata acuminata basi acuta vel acuminata, supra ad venas hinc inde pilosula vel fere glabra, subtus ad nervos strigosa, in axillis nervorum dense barbellata, nervis lateralibus utroque latere 4–6 obliquis valde arcuatis prominulis, nervulis obscuris; flores axillares solitarii vel fasciculati sessiles; calyx cum hypanthio tubuloso-campanulatus 2.5 mm. longus extus dense minute strigillosus, lobis linearibus 1–1.5 mm. longis; corolla alba extus dense ochraceo-strigosa, tubo gracillimo 8–9 mm. longo, lobis apice vix brevissime appendiculatis anguste oblongis intus glabris apiculatis 4–5 mm. longis patentibus.

San Martín: Juan Jui, Alto Río Huallaga, 400 meters, in forest, *Klug 3920* (herb. Field Mus. No. 766,412, type).

Chomelia unguis-cati Standl. Field Mus. Bot. 8: 172. 1930.

Branches armed with stout spines, young branchlets appressed-pilose; stipules triangular, 6–7 mm. long; leaves short-petiolate, the blades subcoriaceous, ovate-oblong, 8–19 cm. long, acute or acuminate, glabrous and shining above, strigose beneath on the veins; inflorescence long-pedunculate, head-like, few-flowered; drupes

narrowly oblong, 17-22 mm. long, 6 mm. thick, appressed-pilose. "Garras de gato," "anzuelo casha."

Loreto: Timbuchi, on the Río Nanay, *Williams 991*, type. Also in eastern Bolivia.

60. ANISOMERIS Presl

Shrubs or small trees, unarmed or often with spinose branchlets; stipules small, usually persistent; leaves petiolate, membranaceous or subcoriaceous; inflorescences axillary, cymose and pedunculate or sometimes reduced to a single flower; calyx 4-lobate or 4-parted; corolla salverform, the lobes imbricate or subvalvate, naked dorsally, the tube usually slender and elongate; fruit drupaceous, 1-2-seeded, the ovary 2-celled.

Inflorescences cymose, pedunculate.

Leaves glabrous beneath or nearly so, barbate in the axils of the veins; calyx lobes minute; corolla lobes very obtuse.

A. peruviana.

Leaves sericeous beneath, not barbate; calyx lobes elongate; corolla lobes acute or acutish..... *A. paniculata*.

Inflorescence sessile or nearly so, sometimes reduced to a single flower.

Leaves sericeous or glabrate beneath; flowers solitary or few and fasciculate..... *A. Klugii*.

Leaves pilose beneath with short, spreading hairs; flowers in dense, sessile clusters..... *A. sessilis*.

Anisomeris Klugii Standl. Field Mus. Bot. 8: 360. 1931.

A slender shrub 2 meters high; stipules narrowly triangular to linear-subulate, 2.5-3.5 mm. long; leaves short-petiolate, the blades oblong-ovate to lance-elliptic, 4-7 cm. long, caudate-acuminate, acute at the base; flowers sessile or short-pedicellate; calyx sericeous, the lobes linear, 2-2.5 mm. long; corolla white, densely sericeous outside, the slender tube 18 mm. long, the 4 lobes linear-attenuate, 4 mm. long.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 661*, type. Santa Rosa, 135 meters, in forest, *Killip & Smith 28738*.

The determination of the latter specimen is somewhat uncertain. It is from a shrub whose branches are armed with spines in their axils.

Anisomeris paniculata (Bartl.) Standl. Field Mus. Bot. 4: 293. 1929. *Guettarda paniculata* Bartl. ex DC. Prodr. 4: 457. 1830. *Stenostomum paniculatum* P. & E. Nov. Gen. & Sp. 3: 27. pl. 232, f. a-e. 1845.

A shrub or small tree, said to be as much as 15 meters high, sometimes armed with spines, the young branches densely appressed-pilose; leaves short-petiolate, thick-membranaceous, elliptic to lance-oblong, 6–11 cm. long, acuminate or attenuate, acute or obtuse at the base, glabrous or glabrate above, sericeous or glabrate beneath; cymes dichotomous, usually long-pedunculate, many-flowered and rather lax; calyx lobes linear or subulate; corolla white, sericeous outside, 12–18 mm. long; fruit oblong, glabrate, about 8 mm. long. "Ripari," "cunshi-cashan," "cunshu-huacran."

Department unknown: Type collected somewhere in the mountains of Peru by *Haenke*. Without locality, *Mathews* 1944; *Poeppig Add. 13*.—Loreto: San Antonio, Alto Río Itaya, *Williams* 3503.—San Martín: Near Tarapoto, *Spruce* 4208. San Roque, in forest, *Williams* 7142. Tarapoto, *Williams* 5617. Mainas Alto, *Poeppig* 1037. Zepelacio, 1,200 meters, in clearing, *Klug* 3372. Pongo de Cainarachi, 230 meters, in forest, *Klug* 2762.

Anisomeris peruviana Standl. Field Mus. Bot. 4: 329. 1929.

Branchlets appressed-pilosulous or almost glabrous; stipules 1.5–2 mm. long, deltoid; leaves short-petiolate, subcoriaceous, the blades elliptic or oblong-elliptic, 2–7 cm. long, obtuse or acutish, acute at the base, glabrous above; peduncles 1–2 cm. long, the cymes densely few-flowered, the flowers sessile or short-pedicellate; corolla 18 mm. long, the slender tube glabrous below, the lobes oval-oblong, 2–2.5 mm. long, densely strigillose outside.

San Martín: Ucayali Valley, *Tessmann* 3481, type. Yarina-cocha, 150 meters, *Tessmann* 3461.

Anisomeris sessilis (Muell. Arg.) Standl. Field Mus. Bot. 8: 361. 1931. *Chomelia sessilis* Muell. Arg. Flora 58: 451. 1875.

A shrub 1.5–2.5 meters high, unarmed, the branchlets hispidulous; stipules 2 mm. long; leaves subsessile, the blades broadly ovate or elliptic, 2–3 cm. long, obtuse or acutish, rounded or obtuse at the base, puberulent above on the veins or glabrate, densely short-pilose beneath; cymes dense and several- or many-flowered; calyx lobes lance-spatulate to obovate-spatulate; corolla 12 mm. long, hirtellous; hypanthium hispidulous.

Loreto: Seringal Auristella, Río Acre, *Ule* 9860. Also in Brazil.

61. CHIOCOCCA L.

Shrubs with small, opposite, leathery leaves; stipules small, persistent; flowers small, pedicellate, more or less secund, arranged in axillary racemes or panicles; calyx 5-dentate; corolla funnelform, the lobes valvate or slightly imbricate in bud; stamens epigynous, the filaments free from the corolla or united with it only at the base; fruit 2-celled, somewhat fleshy, laterally compressed and disk-like; seeds 1 in each cell, compressed.

Chiococca alba (L.) Hitchc. Rept. Mo. Bot. Gard. 4: 94. 1893. *Lonicera alba* L. Sp. Pl. 175. 1753. *C. racemosa* L. Syst. Nat. ed. 10. 917. 1759. *C. brachiata* R. & P. Fl. 2: 67. pl. 219. 1799. *C. anguifuga* Mart. Spec. Mat. Med. Bras. 17. pl. 5. 1824. *C. brachiata* var. *grandifolia* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 50. 1881.

A slender, glabrous shrub 1-4.5 meters high, the branches often elongate and subscentent or pendent; leaves short-petiolate, the blades ovate or oblong-ovate, mostly 4-8 cm. long, acute or acuminate, acute or obtuse at the base; inflorescences usually of small, lax panicles; corolla 7-10 mm. long, white or yellowish, sometimes tinged with pink, the lobes very short; fruit white, orbicular, 5-7 mm. broad.

Amazonas: Chachapoyas, Lobb.—Ayacucho: Near Kimpitiriki, 400 meters, edge of forest, Killip & Smith 22943, 23016. Estrella, 500 meters, thickets, Killip & Smith 23086.—Huánuco: Type of *C. brachiata* from Chinchao, Ruiz & Pavón.—Junín: Chanchamayo Valley, Schunke 351. Eneñas, 1,600-1,900 meters, Killip & Smith 25754. Colonia Perené, 600 meters, Killip & Smith 25029, 25146. Huacapistana, 2,000 meters, thickets, Killip & Smith 24142.—Loreto: Puerto Arturo, Yurimaguas, 200 meters, Williams 5214. Between Yurimaguas and Balsapuerto, 150 meters, Killip & Smith 28361. Puerto Arturo, Killip & Smith 27722.—San Martín: Tarapoto, Williams 5519, 5521, 5616, 6534. Zepelacio, 1,200 meters, Klug 3340. San Roque, 1,400 meters, in forest, Williams 7788. Río Mayo, Tarapoto, in forest, Williams 6217. Alto Río Huallaga, Williams 6167.—Department unknown: Without locality, Weberbauer 6018. Forests of the Andes, Ruiz. Widely distributed in tropical America, ranging to Florida.

Known in Brazil by the names "cepocruz," "raiz preta," "caninarca," "cainca," and "caringa." The plant is used in some regions in domestic medicine, especially as a remedy for snake bites. The pearl-white, pendent fruits are rather pretty and ornamental, sug-

gesting the names "lágrimas de María" and "lágrimas de San Pedro" which are applied to the shrub in Central America.

62. COFFEA L.

Shrubs or small trees, usually glabrous throughout; stipules triangular, persistent; leaves short-petiolate, usually opposite; flowers sessile in the leaf axils, 4-5-parted; calyx very short; corolla salverform or funnelform, the lobes dextrorsely contorted in bud; anthers subsessile, dorsifixed; fruit fleshy, indehiscent, 2-seeded; seeds semi-oval, flat and deeply furrowed on the inner face.—No species of the genus are native in America.

Coffea arabica L. Sp. Pl. 172. 1753.

A shrub or small tree, densely branched; stipules 4-5 mm. long; leaves short-petiolate, the blades lance-elliptic, 12-16 cm. long, cuspidate-acuminate, acute at the base, subcoriaceous; flowers in clusters of 3-7 in the leaf axils, sessile; calyx annuliform, almost obsolete; corolla white, 17-19 mm. long, the 5 lobes widely spreading; fruit subglobose, red at maturity, 10-16 mm. in diameter. "Café."

Ayacucho: Aina, 750-1,000 meters, *Killip & Smith 22823*.—Huánuco: Posuso, 600 meters, well established along many trails, *4628*.—Junín: Colonia Perené, 600 meters, *Killip & Smith 25235*.—Loreto: Mishuyacu, *Klug 584*. La Victoria, *Williams 2736*. Caballococha, *Williams 2258*. Pisco, Alto Nanay, *Williams 1294*. Pro, on the Amazon, *Williams 1966*. Ica, Río Itaya, *Williams*. Fortaleza, Yurimaguas, *Williams 4222, 4467*.—San Martín: Tarapoto, 750 meters, *Williams 6099*. San Roque, 1,400 meters, *Williams 7063*. Native of Abyssinia, but cultivated in most tropical and subtropical regions.

Coffee is grown extensively in Peru at suitable elevations. As in all regions where the plant is grown, it sometimes escapes to thickets and forests and tends to establish itself. A coffee plantation in full flower is a beautiful sight. All the bushes come into blossom at once, but unfortunately the flowers last only two or three days.

Coffea longifolia R. & P. Fl. 2: 66. pl. 218, f. a. 1799.

A small, glabrous shrub; stipules ovate, connate; leaves opposite, petiolate, the blades lance-oblong, acuminate, acute at the base, undulate, shining above, almost 30 cm. long; flowers short-pedicellate, crowded, paniculate, the panicle sessile; calyx minutely 5-dentate; corolla white, 8 mm. long; fruit globose, red, 2-seeded.

Described from Vitoc, *Ruiz & Pavón*. The generic position of this plant can not be determined satisfactorily from the description and illustration. In appearance it suggests *Coussarea*, but it does not correspond to any species of that genus known from Peru, nor can it be placed more satisfactorily in the other related groups.

63. IXORA L.

Shrubs or small trees, usually glabrous or nearly so; stipules more or less connate, often glandular within; leaves mostly opposite and short-petiolate; inflorescence terminal or rarely axillary; calyx tubular, more or less 4-lobate; corolla salverform, the lobes in bud dextrorsely contorted; stamens inserted in the throat of the corolla, the anthers subsessile; ovary 2-celled, the cells 1-ovulate; fruit somewhat fleshy, 2-seeded or by abortion 1-seeded.

Leaves sessile and clasping at base.....*I. coccinea*.

Leaves on short or elongate petioles, not clasping at base.

Flowers in paniced or racemose heads, the branches of the inflorescence densely pilose with spreading hairs...*I. peruviana*.

Flowers not in paniced heads, the inflorescence minutely puberulent, glabrous, or with minute, appressed hairs.

Corolla glabrous outside.

Inflorescence lax and open, the flowers slender-pedicellate; leaves acuminate; native plant.....*I. Killipii*.

Inflorescence dense and compact, often head-like; leaves obtuse or acute; cultivated plants.

Corolla red or pink; calyx lobes very short, rounded.

I. chinensis.

Corolla white; calyx lobes oblong to linear-lanceolate, elongate.....*I. Finlaysonian*.

Corolla minutely puberulent.

Corolla tube 5-6 mm. long; leaves subcoriaceous...*I. escalerae*.

Corolla tube 10-15 mm. long; leaves subcoriaceous.

Leaf blades narrowly oblong-lanceolate or linear-lanceolate, long-acuminate; inflorescence laxly branched, composed of numerous cymes.....*I. intensa*.

Leaf blades oblong or elliptic-oblong, acute or short-acuminate; inflorescence composed usually of 3 head-like cymes.....*I. Ulei*.

***Ixora chinensis* Lam. Encycl. 3: 344. 1789.**

A glabrous shrub; leaves short-petiolate or sessile, the blades subcoriaceous, oblong or elliptic-oblong, 8–12 cm. long, acute or subobtusate; inflorescence cymose, sessile, dense and many-flowered, the flowers sessile or short-pedicellate; calyx minutely puberulent; corolla red or pink, the filiform tube slightly more than 2 cm. long, the broadly rounded lobes 6 mm. long. "Buquet de novia rosado."

Loreto: Caballo-cocha, cultivated, *Williams* 2370. Native of southeastern Asia, but cultivated for ornament in most tropical regions.

***Ixora coccinea* L. Sp. Pl. 110. 1753.**

A small, dense, nearly or quite glabrous shrub; leaves sessile, broadly oblong to almost rounded, usually conspicuously cordate at the base, obtuse or rounded at the apex, subcoriaceous; inflorescence dense and head-like, sometimes axillary, the flowers sessile or nearly so; calyx lobes broadly ovate, obtuse or acutish; corolla deep red, minutely puberulent or glabrate, the filiform tube 2.5–3 cm. long, the spreading lobes acute. "Buquet de novia."

Loreto: Near Iquitos, *Williams* 1544, 1417. Fortaleza, Yurimaguas, *Williams* 4328. Mishuyacu, in clearing, *Klug* 679. Native of India, but cultivated generally for ornament in tropical regions.

One of the favorite ornamental shrubs of the gardens of tropical America, because of its brilliant red flowers. It is doubtful whether it ever escapes from cultivation, although it may persist about abandoned house sites.

***Ixora escalerae* Standl. Field Mus. Bot. 8: 173. 1930.**

A shrub or small tree, 2–5 meters high, the branchlets strigillose; stipules 4–5 mm. long, linear-subulate; petioles 1–1.5 cm. long; leaf blades oblong-elliptic or lance-oblong, 10–18 cm. long, acuminate, acute or acutish at the base, sparsely strigillose beneath on the veins; inflorescence laxly paniculate, 9 cm. long, the pedicels 3–5 mm. long; calyx remotely and minutely denticulate; corolla white or cream-colored, the lobes oblong, obtuse, 4 mm. long.

Loreto: Cerro de Escalera, 1,200 meters, *Ule* 6778, type. Also in Colombia.

***Ixora Finlaysonianana* Wall. Cat. No. 6166. 1832, nomen; G. Don, Gen. Syst. 3: 512. 1832.**

A densely branched shrub 1–2 meters, high, nearly or quite glabrous; leaves on short, thick petioles, subcoriaceous, the blades

oblong or oblanceolate-oblong, obtuse or acute, attenuate to the base; inflorescence dense and head-like, many-flowered; corolla white, the filiform tube about 3.5 cm. long, the oblong or elliptic, obtuse lobes 6–7 mm. long. "Buquet de novia."

Loreto: Caballo-cocha, *Williams* 2129. Iquitos, *Williams* 8248, 1545. Mishuyacu, in clearing, *Klug* 493.—San Martín: Tarapoto, *Williams* 5924. Native of Siam; cultivated for ornament generally in tropical America.

The plant is one of the favorite ornamental shrubs of tropical American gardens.

Ixora intensa Krause, Notizbl. Bot. Gart. Berlin 6: 205. 1914.

A shrub 1–1.5 meters high with rather stout branches, glabrous almost throughout; leaves subcoriaceous, on thick, short petioles, the blades narrow and elongate, very long-acuminate, acute at the base; inflorescence lax and open, rather copiously branched, the cymules chiefly 3-flowered, the flowers short-petiolate or sessile; corolla red or red and yellow, the lobes spreading or reflexed, rounded, about one-third as long as the tube. Neg. 420.

Loreto: Timbuchi on the Río Nanay, *Williams* 1033. Pintococha, Río Nanay, in forest, *Williams* 806. Mishuyacu, 100 meters, in forest, *Klug* 23, 697. Also along the Amazon in Brazil.

Ixora Killipii Standl. Field Mus. Bot. 8: 174. 1930.

A shrub or small tree, 3–6 meters high, glabrous or nearly so; stipules short, persistent; leaves subsessile, firmly membranaceous, oblong or oblong-elliptic, 8–22 cm. long, acuminate, somewhat narrowed to the base, the base itself usually obtuse or narrowly rounded; inflorescence lax and open, as much as 12 cm. broad, sessile or short-pedunculate, the slender pedicels 1 cm. long or less; calyx lobes triangular, acuminate; corolla cream-colored, the tube filiform, 2–2.5 cm. long, the lobes linear-lanceolate, acute, usually 6–10 mm. long; fruit subglobose, 6–8 mm. in diameter, black or dark purple. "Chimicúa."

Junín: Santa Rosa, 625–900 meters, dense forest, *Killip & Smith* 26148, type.—Loreto: Florida, 180 meters, *Klug* 2292. Yurimaguas, in forest, *Williams* 4532, 3877; *Killip & Smith* 27698. Puerto Arturo, in forest, *Williams* 5120, 5362, 5310, 5307, 5173; *Killip & Smith* 27921. Huallaga, Yurimaguas, in forest, *Williams* 4650. Sapoto Yacu, Santa Rosa, in forest, *Williams* 4920, 4916.—Without locality: *Poeppig* 2242. Also in Bolivia and Colombia.

Ixora peruviana (Spruce) Standl. Field Mus. Bot. 11: 217. 1936. *Cephalanthus peruvianus* Spruce ex Schum. in Mart. Fl. Bras. 6, pt. 6: 129. 1888. *C. breviflorus* Spruce ex Schum. loc. cit.

A shrub 3 meters high with stout branches, the branchlets glabrous; stipules persistent, 8–10 mm. long; leaves on rather long petioles, the blades subcoriaceous, obovate to oblong-oblancoolate, short-acuminate or rounded and apiculate, long-attenuate to the base, glabrous; inflorescences sessile, the heads long-pedunculate, dense, many-flowered; hypanthium densely pilose; corolla white, more or less pilose outside, 6–10 mm. long, the lobes equaling the tube or shorter, linear-oblong, spreading; fruit subglobose, 6–7 mm. long, thinly pilose. Negs. 272, 273.

Loreto: Pebas on the Amazon, *Williams* 1568.—San Martín: Tarapoto, *Spruce* 4910, type collection of *C. peruvianus*; *Spruce* 4175, type collection of *C. breviflorus*; *Williams* 6717, 6716, 6595. Juan Jui, 400 meters, in forest, *Klug* 3867. Also in Bolivia and Amazonian Brazil.

The flowers are said to be strongly sweet-scented. From Brazil this species is described as a tree of 19 meters, perhaps in error.

Ixora Ulei Krause, Notizbl. Bot. Gart. Berlin 6: 205. 1914.

A shrub 2 meters high, almost glabrous; leaves on stout petioles 1–1.5 cm. long, the blades subcoriaceous, acute at the base; inflorescence sessile, the flowers sessile or short-pedicellate; calyx puberulent, the lobes ovate, acute; corolla yellow and red, the lobes oval, obtuse, one-third as long as the tube or shorter. Neg. 421.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 1100. Also in Brazil.

In Brazil this species is reported as a tree of 7.5 meters.

64. COUSSAREA Aubl.

Shrubs or trees, usually glabrous; stipules commonly ovate-triangular, muticous, apiculate, or truncate, never subulate-aristate nor connate into a long intrapetiolar sheath; leaves opposite or rarely verticillate, short-petiolate or subsessile, more or less coriaceous; inflorescence terminal; calyx cupular and truncate, sometimes 4-dentate or rarely with 4 linear lobes; corolla funnelform or salverform, the throat naked, the 4 lobes valvate in bud; anthers subsessile in the corolla tube; ovary 2-celled; fruit baccate, by abortion commonly 1-seeded, longer than broad.

Leaves sessile or practically so, narrowed to an obtuse or cordate base.

Leaves 3-6 cm. wide, not abruptly contracted at the base; pedicels 4-15 mm. long *C. sessilifolia*.

Leaves 6-13 cm. wide, abruptly contracted at the base; pedicels 1-2 mm. long *C. auriculata*.

Leaves petiolate, the blades acute at the base.

Leaves densely short-pilose beneath.

Flowers simply capitate *C. megalocarpa*.

Flowers in cymose heads *C. obliqua*.

Leaves glabrous or practically so.

Flowers in heads or head-like umbels.

Flowers capitate or in head-like umbels; corolla lobes equaling or longer than the tube.

Lobes of the corolla about equaling the tube; leaves subcoriaceous *C. brevicaulis*.

Lobes of the corolla almost twice as long as the tube; leaves membranaceous *C. liliiflora*.

Flowers in trichotomous heads; corolla lobes shorter than the tube.

Calyx deeply dentate, the teeth acute; corolla lobes slightly shorter than the tube *C. flava*.

Calyx obscurely denticulate; corolla lobes less than half as long as the tube *C. tricephala*.

Flowers in panicles or corymbs.

Corolla lobes much longer than the tube.

Corolla spirally twisted in bud, the lobes twice as long as the tube; flowers subsessile *C. hydrangeifolia*.

Corolla not twisted in bud, the lobes less than twice as long as the tube; flowers pedicellate *C. tortilis*.

Corolla lobes equaling or shorter than the tube.

Corolla tube 20-35 mm. long.

Calyx minutely puberulent or almost glabrous.

C. tenuiflora.

Calyx hispidulous.

Corolla tube 2 cm. long, the lobes 5-6 mm. long.

C. hirticalyx.

Corolla tube 3–3.5 cm. long, the lobes 2–3 cm. long.

C. macrantha.

Corolla tube 5–10 mm. long.

Corolla glabrous; leaves 2–3 cm. wide. *C. longiacuminata*.

Corolla minutely puberulent; leaves 5–9.5 cm. wide.

Leaves coriaceous, rounded and abruptly caudate at the apex. *C. ovalis*.

Leaves thin, acute and gradually caudate-acuminate.

C. rudgeoides.

Coussarea auriculata Standl. Field Mus. Bot. 4: 330. 1929.

Glabrous or nearly so; stipules broadly triangular, 2–3.5 mm. long, obtuse or almost truncate; leaves broadly elliptic or elliptic-obovate, 11–19 cm. long, acuminate, narrowly cordate at the base, subcoriaceous; inflorescence thyrsoid-paniculate, short-pedunculate, 6–7 cm. broad, many-flowered; calyx truncate; corolla tube 7 mm. long, the lobes oblong-linear, 4 mm. long, obtuse.

Amazonas: Pongo de Manseriche, mouth of Río Santiago, *Tessmann* 4647, type.—San Martín: Pongo de Cainarachi, 230 meters, in forest, a tree of 5 meters with white flowers, *Klug* 2728. Also in Bolivia.

Coussarea brevicaulis Krause, Bot. Jahrb. 40: 142. 1907, nomen; Verh. Bot. Ver. Brandenb. 50: 117. 1908. *C. benensis* Britton ex Standl. Field Mus. Bot. 7: 296. 1931.

A shrub 1–4.5 meters high, glabrous almost throughout; stipules broadly ovate, obtuse, 3–3.5 mm. long; leaves short-petiolate, coriaceous, the blades elliptic-oblong to lance-oblong, 10–20 cm. long, long-acuminate, acute at the base; umbels head-like, 3–7-flowered, short-pedunculate or subsessile; calyx 4-dentate; corolla white or cream-colored, pruinose-puberulent or almost glabrous, 2–4 cm. long, the lobes and tube subequal; fruit ellipsoid-globose, white, 2 cm. long. Neg. 786.

Loreto: Puerto Arturo, Yurimaguas, in forest, *Williams* 5258, 5259. Caballo-cocha on the Amazon, in forest, *Williams* 2310. Masana, edge of forest, *Williams* 8175. Florida, 180 meters, *Klug* 2362. Balsapuerto, 150–350 meters, *Killip & Smith* 28566. Soledad, 110 meters, *Killip & Smith* 29678. Also in adjacent Brazil and in Bolivia.

Coussarea flava P. & E. Nov. Gen. & Sp. 3: 26. *pl.* 231. 1845.

A shrub 2 meters high; leaves short-petiolate, the blades lance-oblong to elliptic-oblong, as much as 24 cm. long and 7.5 cm. wide, long-acuminate, attenuate to the base, glabrous; stipules ovate, acute; flowers arranged in 3 pedunculate heads; calyx sericeous, deeply dentate; corolla sericeous, the lanceolate lobes slightly shorter than the tube; fruit globose, as large as a walnut.

San Martín: Misión Tocache, *Poeppig*, type.

I have seen no material of this species, of which *C. tricephala* Standl. may be a synonym. The two plants are much alike in general appearance but the flower details of *C. flava*, as described, are conspicuously different from those of *C. tricephala*.

Coussarea hirticalyx Standl. Field Mus. Bot. 8: 175. 1930.

A shrub or tree 3-7.5 meters high, almost glabrous; stipules caducous; leaves petiolate, the blades firm-membranaceous, broadly elliptic or elliptic-oblong, 14-20 cm. long, 6-9.5 cm. wide, caudate-acuminate, acute or obtuse at the base, sparsely hispidulous beneath on the veins; inflorescence ovoid-paniculate, short-pedunculate, 6-9 cm. long and broad, the branches minutely sericeous or glabrate, the flowers sessile or subsessile; calyx 2-2.8 mm. long, truncate or obsoletely denticulate; corolla white, minutely puberulent, the tube 2 cm. long, the oblong-linear lobes 5-6 mm. long.

Loreto: La Victoria, on the Amazon, in forest, *Williams* 2528, type. Caballo-cocha, on the Amazon, in forest, *Williams* 2504, 2406. Iquitos, 100 meters, in forest, *Killip & Smith* 27191, 27198.

Coussarea hydrangeifolia (Benth.) B. & H. ex Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 94. 1881. *Faramea hydrangeifolia* Benth. *Linnaea* 23: 451. 1850.

A nearly glabrous shrub 2.5-3.5 meters high; stipules triangular, acute; leaves short-petiolate, the blades oblong-ovate to rounded-ovate, as much as 20 cm. long, shortly cuspidate-acuminate, usually obtuse or rounded at the base; panicles short, ovoid, few- or many-flowered, the flowers nearly sessile; calyx truncate, sometimes obscurely denticulate; corolla glabrous, 10 mm. long, the lobes twice as long as the tube; fruit ellipsoid, 8 mm. long. Neg. 6152.

San Martín: Near Tarapoto, *Spruce* 4423. Also in Bolivia and Brazil.

Coussarea liliiflora Standl. Field Mus. Bot. 11: 197. 1936.

A glabrous tree; stipules 1.5-2 mm. long, subulate-mucronate from a rounded-triangular base; leaves rather long-petiolate, mem-

branaceous, the blades ovate-oblong or elliptic-oblong, 4–7 cm. long, 2–3 cm. wide, abruptly caudate-acuminate, abruptly contracted and decurrent at the base, with about 6 pairs of lateral nerves; flowers terminal, solitary or ternate, subsessile or short-pedicellate, the hypanthium 2–3 mm. long; calyx broadly campanulate, 2.5–3 mm. long, truncate and remotely dentate; corolla narrowly linear in bud, long-attenuate to the apex, the slender tube 2 cm. long, the 4 lobes linear, 3.5 cm. long, 2 mm. wide.

Loreto: Mouth of Río Santiago on the Río Marañón, upland forest, 160 meters, *Tessmann 4621*, type.

Coussarea longiacuminata Standl. Field Mus. Bot. 4: 330. 1929.

A glabrous shrub or small tree; stipules persistent, 2–2.5 mm. long; leaves short-petiolate, the blades coriaceous, narrowly elliptic-oblong, 7–9.5 cm. long, caudate-acuminate, acute at the base; inflorescence cymose-paniculate, sessile or short-pedunculate, laxly few-flowered, trichotomous at the base, the pedicels 3 mm. long; calyx 4-denticulate; corolla tube slender, 9–10 mm. long, the lobes 4–5 mm. long.

Cajamarca; Tabaconas, 2,400 meters, *Weberbauer 6117*, type.

Coussarea macrantha Standl. Field Mus. Bot. 11: 197. 1936.

A shrub 1 meter high, glabrous except in the inflorescence; stipules deciduous, 4–5 mm. long; leaves short-petiolate, thick-membranaceous, fuscous when dried, the blades broadly elliptic or oblong-elliptic, 17–24 cm. long, 8–13 cm. wide, abruptly attenuate-acuminate, rounded or acute at the base; inflorescence short-pedunculate, cymose-corymbose, trichotomous at the base, 10 cm. long, the cymes umbelliform, the branches sparsely puberulent; hypanthium densely sericeous, the calyx 4 mm. long, remotely denticulate, sparsely sericeous and hispidulous; corolla white, minutely puberulent, the lobes linear-lanceolate.

Loreto: Florida, on the Río Putumayo, 200 meters, in forest, *Klug 2070*, type.

Coussarea megalocarpa Standl. Field Mus. Bot. 8: 366. 1931.

A small tree, the branchlets sparsely puberulent; stipules deciduous; leaves short-petiolate, firm-membranaceous, the blades elliptic or oblong-elliptic, 12–18 cm. long, 4.5–8 cm. wide, long-acuminate, acute at the base, minutely puberulent above on the veins; inflorescence capitate, densely many-flowered, short-pedunculate; calyx

lobes linear or subulate, 12 mm. long or less; fruit oval-globose, 3 cm. long, sparsely puberulent or pilosulous.

Loreto: Río Masana near Iquitos, 125 meters, *Williams 8171*, type.

Coussarea obliqua Standl. Field Mus. Bot. 11: 199. 1936.

A tree 5 meters high, the branchlets glabrous; stipules 6–7 mm. long; leaves petiolate, subcoriaceous, fuscous when dried, the blades oblong or elliptic-oblong, 20 cm. long, 9 cm. wide, cuspidate-acuminate, acute and oblique at the base, glabrous above, beneath densely and minutely appressed-pilose; inflorescence pedunculate, cymose, 9 cm. long, composed of several pedunculate, densely many-flowered heads; hypanthium minutely puberulent or glabrate, the calyx rounded-lobulate; corolla cream-colored, glabrous, the slender tube 2.5 cm. long, the narrow lobes 10–12 mm. long.

Loreto: Florida, on the Río Putumayo, 200 meters, in forest, *Klug 1987*, type.

Coussarea ovalis Standl. Field Mus. Bot. 8: 367. 1931.

Almost glabrous; stipules 8 mm. long, broadly rounded and subulate-acuminate; leaves coriaceous, short-petiolate, the blades oval, 14–17 cm. long, rounded at the apex and caudate, obtuse or acute at the base; inflorescence thyrsoïd-paniculate, 5–9 cm. long, sessile or pedunculate, many-flowered, the flowers sessile; calyx 1.5 mm. long, glabrous, truncate; corolla minutely pulverulent, the tube 5–6 mm. long, the lobes 4.5 mm. long. "Chorchulla."

Loreto: Paraíso on Río Itaya, *Williams 3355*, type. Fortaleza, 140 meters, in forest, a tree of 12 meters with white flowers, *Klug 2777*.

Coussarea rudgeoides Rusby, Mem. Torrey Club 6: 48. 1896.

A nearly glabrous shrub or tree 2.5–5 meters high with rather slender branches; stipules 3–4 mm. long, rounded at the apex; leaves nearly sessile or short-petiolate, the blades elliptic-oblong to lance-oblong, 12–25 cm. long, 5–10 cm. wide, acute or abruptly acuminate at the base; flowers cymose-paniculate, the panicles 5–6 cm. long, pedunculate; calyx truncate, obscurely denticulate; corolla white, 12 mm. long, the lobes half as long as the tube; fruit white, ellipsoid, about 1 cm. long.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith 26450*.—Loreto: Between Yurimaguas and Balsapuerto, 140 meters, dense forest, *Killip & Smith 28118*. Fortaleza, 140 meters,

Klug 2786.—San Martín: Forests of Mount Guayrapurina, *Spruce 3918*. Also in Bolivia.

It is possible that this may be *Coffea acuminata* R. & P., since it resembles the figure of that species in foliage characters.

***Coussarea sessilifolia* Standl.** Field Mus. Bot. 8: 367. 1931.

A glabrous shrub with slender branches; stipules 1 mm. long, subtruncate and mucronate; leaves sessile or nearly so, elliptic-oblong or obovate-elliptic, 6.5–11 cm. long, abruptly short-acuminate, rounded or shallowly cordate at the base; inflorescence cymose-paniculate, long-pedunculate, laxly few-flowered; calyx 2 mm. long, shallowly dentate; corolla glabrous, 18 mm. long, the linear lobes almost twice as long as the slender tube.

Loreto: Puerto Arturo, Yurimaguas, 200 meters, in forest, *Williams 5084* (type), *5201*.

***Coussarea tenuiflora* Standl.** Field Mus. Bot. 4: 331. 1929.

A nearly glabrous shrub; stipules deciduous; leaves petiolate, subcoriaceous, the blades ovate-elliptic or broadly elliptic, 12–30 cm. long, caudate-acuminate, acute to rounded at the base; inflorescence cymose-corymbose, subsessile or rather long-pedunculate, trichotomous, few- or many-flowered, the flowers sessile; calyx 1.6 mm. long, truncate; corolla tube 25–28 mm. long or longer, the lobes oblong, obtuse, puberulent outside and commonly short-barbate at the tips; fruit ellipsoid, 1.5–2 cm. long. "Supi caspi," "motelo micuna," "ginsira caspi."

Loreto: Yurimaguas, in forest, *Williams 7830, 4172*. Puerto Arturo, in forest, *Williams 5177*. Parana Pura, Yurimaguas, *Williams 4622*. Mainas, *Poeppig 2256*. Masana, Iquitos, *Williams 8152*.—San Martín: Near Tarapoto, *Spruce 4422*, type. Rumizapa, near Tarapoto, *Williams 6775*. Also in adjacent Brazil.

***Coussarea tortilis* Standl., sp. nov.**

Arbor 10-metralis omnino glabra, ramulis ut videtur gracilibus in sicco viridescentibus, internodiis elongatis; stipulae virides 7 mm. longae ovato-ovales obtusae; folia magna breviter petiolata papyracea, petiolo gracili circa 1.5 cm. longo; lamina late ovali-ovata circa 22 cm. longa et 12 cm. lata abrupte caudato-acuminata, acumine angusto attenuato 2.5 cm. longo, basi late rotundata abrupte contracta et triangulari-decurrens, supra in sicco laete viridis, nervulis prominulis, subtus paullo pallidior, costa gracili atque elevata, nervis lateralibus utroque latere circa 9 tenuibus prominentibus

pallidis, in axillis domatiatis, venulis prominentibus laxe reticulatis; flores albi cymoso-paniculati, paniculis 1.5–2 cm. longe pedunculatis laxe multifloris 5–6 cm. longis et fere aequilatis, ramis pallidis plus minusve compressis, bracteis minutis inconspicuis, pedicellis ad 4 mm. longis; hypanthium oblongum 1.5 mm. longum, calyce campanulato 1 mm. longo pallido truncato et minute remote denticulato; corolla in alabastro anguste linearis spiraliter torta, tubo gracili 7–8 mm. longo, lobis anguste linearibus 12 mm. longis intus minute sparse puberulis.

San Martín: Pongo de Cainarachi, Río Cainarachi, a tributary of the Río Huallaga, 230 meters, in forest, *Klug 2700* (herb. Field Mus. No. 675,992, type).

Coussarea tricephala Standl. Field Mus. Bot. 8: 368. 1931.

A nearly glabrous shrub; stipules broadly ovate, obtuse; leaves short-petiolate, the blades membranaceous, elliptic-oblong, 10.5–16 cm. long, 3.5–6 cm. wide, long-acuminate, attenuate to the base, minutely pilosulous above on the nerves; inflorescence of 3 small, stalked heads on a common short peduncle, the heads 1 cm. in diameter; calyx 2 mm. long, obsoletely denticulate; corolla glabrous or sparsely and minutely puberulent, the tube slender, 2.5 cm. long, the lobes linear-oblong, obtuse, sparsely hispidulous at the apex, 1 cm. long.

San Martín: Tarapoto, *Williams 6533*, type.

65. **FARAMEA** Aubl.

Shrubs or small trees, usually glabrous throughout; stipules short-triangular and long-aristate, or often long-sheathing; leaves opposite, petiolate or sessile, most frequently coriaceous; inflorescences various, terminal or axillary, few- or many-flowered; calyx tubular or urceolate, truncate or dentate; corolla commonly salverform, the 4 lobes valvate in bud, the throat naked; anthers sessile in the corolla tube; ovary 1-celled; fruit baccate or almost dry, by abortion 1-seeded, the seed horizontal, deeply excavate on the lower side.

Flowers densely clustered in the leaf axils. *F. axillaris*.

Flowers in terminal inflorescences, or at least never densely glomerate in the leaf axils.

Inflorescence with large, brightly colored, foliaceous bracts.

F. anisocalyx.

Inflorescence with small or minute and inconspicuous bracts.

Flowers in simple umbels, these solitary or clustered.

F. quinqueflora.

Flowers numerous, paniculate or corymbose.

Leaves conspicuously 3-nerved, the lateral nerves joined to form an almost regular, submarginal, collective nerve.

Corolla in bud 5 mm. long; stipules 3.5–4 cm. long.

F. miconioides.

Corolla in bud 10–15 mm. long; stipules small.

Lateral nerves of the leaves perpendicular to the costa; leaf blades perfectly oblong. *F. exemplaris.*

Lateral nerves of the leaves oblique; leaves oblong-elliptic. *F. Harmsiana.*

Leaves not at all 3-nerved, the lateral nerves not united to form a distinct collective nerve.

Leaves cordate or subcordate at the base, sessile.

F. subsessilis.

Leaves acute to obtuse at the base, usually distinctly petiolate.

Stipules long-connate into a sheath, this with short-aristate lobes, usually persistent.

Calyx with distinct, subulate-acuminate lobes.

F. phyllonomoides.

Calyx truncate or with minute and often obtuse teeth.

F. maynensis.

Stipules short-connate or almost distinct, long-aristate, not forming a sheath, often deciduous.

Pedicels much elongate, equaling or exceeding the flowers, often flexuous, capillary. . . *F. capillipes.*

Pedicels much shorter than the flowers, straight or nearly so, stouter.

Inflorescence condensed and head-like. *F. congesta.*

Inflorescence open, not head-like.

Leaf blades large, commonly 7–13 cm. wide.

Calyx truncate; lateral nerves almost perpendicular to the costa. *F. rectinervia.*

Calyx with conspicuous, subulate teeth; lateral nerves oblique. *F. amplifolia.*

Leaf blades commonly 3–6 cm. wide.

Lobes of the corolla half as long as the tube or shorter. Leaves coriaceous; inflorescence few-flowered.....*F. coerulescens*.

Lobes of the corolla about equaling the tube, sometimes slightly shorter or longer.

Corolla 1 cm. long.....*F. glandulosa*.

Corolla about 2 cm. long.....*F. occidentalis*.

Faramea amplifolia Standl. Field Mus. Bot. 8: 177. 1930.

A glabrous shrub or tree with thick branchlets; stipules soon deciduous; leaves short-petiolate, subcoriaceous, the blades elliptic-oblong to narrowly oval, 22–28 cm. long, 9.5–13 cm. wide, rounded and short-cuspidate at the apex, obtuse or acutish at the base, paler beneath; inflorescence sessile, cymose-paniculate, large and many-flowered, 12–18 cm. long and broad, the pedicels 2–10 mm. long; calyx distinctly dentate, the teeth triangular-subulate; corolla in bud 4–5 mm. long, acutely angulate, the lobes and tube subequal; fruit depressed-globose, 8–13 mm. wide.

Loreto: Pebas, on the Amazon, in forest, *Williams* 1946 (type), 1575. Puerto Arturo, 200 meters, in forest, *Williams* 5355.

Faramea anisocalyx P. & E. Nov. Gen. & Sp. 3: 28. 1845.

A glabrous shrub or small tree, 7.5 meters high or less, with slender branches; stipules short, broadly ovate, long-aristate, deciduous; leaves thick-membranaceous, short-petiolate or subsessile, the blades oblong or obovate-oblong, caudate-acuminate, acutish to attenuate at the base, lustrous; peduncles commonly 3 at the end of each branch, the flowers umbellate at their tips, pedicellate; bracts large and leaf-like, ovate or elliptic, petiolate; calyx lobes often unequal, with 2 of them longer than the others; corolla blue with a whitish tube; fruit reported as white or purple-black. Negs. 805, 8619.

Junín: Cahuapanas, 340 meters, dense forest, *Killip & Smith* 26723.—Loreto: Entre Ríos, *Fox* 17. Near Yurimaguas, 180 meters, *Mexia* 6084. Caballo-cocha, *Osgood* 10; *Williams* 2209. Mainas, *Poeppig* 805, 2030 (perhaps the type collections). La Victoria, in or at edge of forest, *Williams* 2759, 2967. Yurimaguas, in forest, *Williams* 4122; *Tessmann* 5504. Santa Rosa, *Williams* 4864. Iquitos, *Killip & Smith* 27333, 27119. Punchana, in jungle, *Williams* 1330. Pebas, *Williams* 1898. Soledad, 110 meters, *Killip & Smith*

29797.—San Martín: Type from Misión Tocache, *Poeppig*.—Without locality, *Pavón*. Also in Bolivia and Amazonian Brazil.

"Uchu sanango." The species is easy of recognition because of the large and brightly colored bracts, which are reported variously as blue, pink, or white. Some of the specimens have been determined as *Faramea Schwackei* Schum. & Krause, a species described from Amazonian Brazil, which does not seem to differ from *F. anisocalyx*.

Of the plant Huber (Bol. Mus. Paraense 4: 615. 1906) writes as follows: "This shrub is one of the most beautiful ornaments of the Ucayali region because of its bracts, which are of a pure sky blue and literally cover the plants when in flower. Crossing the forest west of Sarayacu I was deceived several times by the numerous shrubs of this species, thinking that I was seeing the sky through the trees."

Faramea axillaris Standl. Field Mus. Bot. 8: 178. 1930.

A glabrous shrub 1.5 meters high or less, sparsely branched or almost simple; stipules persistent, broadly triangular, long-aristate; leaves almost sessile, membranaceous or thicker, oblanceolate-oblong or obovate-oblong, 8–19 cm. long, abruptly acute or short-acuminate, narrowed to the acute or obtuse base; flowers densely fasciculate in the leaf axils or in small, dense cymes, sessile or subsessile; calyx truncate; corolla white, the tube 4 mm. long, the acuminate lobes slightly shorter; fruit blue, globose, almost 1 cm. long.

Loreto: Balsapuerto, 150–350 meters, dense forest, *Killip & Smith 28655*, type. Santa Rosa, in forest, *Williams 4954*; *Killip & Smith 28900, 28711, 28939*. Yurimaguas, 135 meters, *Killip & Smith 28198*. Soledad, *Killip & Smith 29643*. Puerto Arturo, in forest, *Williams 5103*; *Killip & Smith 27924*. Paraíso, Alto Itaya, *Williams 3368*.—Amazonas: Mouth of Río Santiago, 160 meters, upland forest, *Tessmann 4593*.

Faramea capillipes Muell. Arg. Flora 58: 474. 1875.

A glabrous shrub 3 meters high with slender branches; stipules short, triangular, long-aristate; leaves short-petiolate, subcoriaceous, the blades oblanceolate-oblong to oblong-obovate, 5–12 cm. long, cuspidate-acuminate, acute or attenuate at the base; inflorescences terminal and from the upper axils, sessile or pedunculate, few- or many-flowered, very lax and open, with long, slender pedicels, the flowers cymose or subumbellate; calyx truncate; corolla 12 mm. long, the narrow, attenuate lobes much exceeding the thick tube;

fruit globose, 6–8 mm. in diameter. "Chaleta," "kikin-kaka." Neg. 809.

Amazonas: Mouth of Río Santiago, *Tessmann 4293*.—Loreto: Santa Ana, *Williams 1234*. Leticia, *Ule 6220*. Río Nanay, forest, *Williams 753*. Mishuyacu, 100 meters, in forest, *Klug 691*. Also in Amazonian Brazil and in Venezuela.

Faramea coerulescens Schum. & Krause, Bot. Jahrb. 40: 347. 1908.

A densely branched, glabrous shrub or small tree 3–5 meters high; stipules triangular, acuminate, 3–4 mm. long; leaves short-petiolate, coriaceous, the blades obovate or oblong-elliptic, 4–8 cm. long, 1.5–4.5 cm. wide, obtusely short-acuminate or acutish, acute or acutish at the base; flowers subcorymbose, few, on short or elongate, usually stout pedicels, fragrant; calyx 4-dentate; corolla white, the rather stout tube 1.5–2 cm. long, the lobes ovate, much shorter. Neg. 811.

Amazonas: Chachapoyas, *Mathews*.—Without locality: Ruiz & Pavón; *Weberbauer 7151*. Also in the mountains of Ecuador.

Faramea congesta Huber, Bol. Mus. Paraense 4: 615. 1906.

A shrub 1–2 meters high; leaves short-petiolate or subsessile; stipules short-connate, long-aristate; leaf blades ovate or oblong-lanceolate, 10–15 cm. long, 3.5–5.5 cm. wide, falcately long-acuminate, acute or short-acuminate at the base, glabrous above, pilosulous beneath on the nerves or glabrate, ciliate; inflorescence subsessile, condensed and head-like, hirtellous, 10–20-flowered; corolla white, 13 mm. long; calyx lobes subulate, recurved or revolute; lobes of the corolla equaling the tube.

Loreto: Type from Cerro de Chanchahuaya, *Huber*.

Faramea exemplaris Standl. Field Mus. Bot. 11: 205. 1936.

A shrub or small tree 4 meters high, glabrous throughout, the branches slender, obtusely tetragonous; stipules deciduous, cuspidate-attenuate from an ovate-triangular base; leaves large, short-petiolate, the blades oblong, 20–26 cm. long, 5.5–8.5 cm. wide, rather abruptly caudate-acuminate, the tip linear and elongate, rounded or obtuse at the base or rarely subacute, strongly bullate, the lateral nerves about 24 on each side, strongly elevated beneath; inflorescence large, laxly many-flowered, pedunculate, about 11 cm. long and broad, the pedicels 2–3 mm. long; calyx less than 1 mm. long; corolla in bud 12–13 mm. long, long-attenuate, the lobes almost twice as long as the tube, yellow.

Loreto: Mouth of the Río Santiago, upper Marañón, 160 meters, in upland forest, *Tessmann 4562*, type.

Faramea glandulosa P. & E. Nov. Gen. & Sp. 3: 29. *pl.* 234. 1845.

A glabrous shrub or small tree 2–6 meters high, with slender or rather stout branches; stipules deltoid or ovate, long-aristate, mostly deciduous; leaves short-petiolate, subcoriaceous or thick-membranaceous, chiefly oblong, gradually or abruptly caudate-acuminate, acute or obtuse at the base, lustrous; flowers fragrant, cymose-paniculate, the panicles few- or many-flowered, sessile or pedunculate, usually rather open, stiffly branched, the flowers short-pedicellate; calyx 4-dentate; corolla white or blue, 8–10 mm. long, the lobes equaling or somewhat longer than the tube; fruit subglobose, black or purple. Neg. 818.

Huánuco: Type from Cochero, *Poeppig*.—Junín: San Nicolás, 1,100 meters, *Killip & Smith 25976*. La Merced, 1,200 meters, *Macbride 5716*.—Loreto: Yurimaguas, in forest, *Williams 3892, 4527; Mexia 6083; Killip & Smith 28053*. Mainas, *Poeppig 2067, 2124*. San Antonio, *Williams 3498; Killip & Smith 29451, 29336, 29327*. Puerto Arturo, 135 meters, *Killip & Smith 27804*. Soledad, *Killip & Smith 29799, 29629, 29577*. Iquitos, in forest, *Williams 3682, 1489; Killip & Smith 27193*. Paraíso, *Williams 3321, 3370, 3376*. Mishuyacu, *Killip & Smith 29964; Klug 444*. San Ramón, in forest, *Williams 4571*. Río Itaya, *Williams 231, 109*. La Victoria, *Williams 2525*. Manfina, *Williams 1129*. Balsapuerto, *Killip & Smith 28397*.—San Martín: Near Tarapoto, *Spruce 4612; Williams 6093, 6065*. Between Tarapoto and Chasuta, *Raimondi 948*.—Without locality: *Poeppig 1444*. Also in Amazonian Brazil.

"Charichuela," "situlli caspi." Some of the collections cited have been referred erroneously to *F. candelabrum* Standl., a Bolivian species. Others have been determined as *F. amazonica* Muell. Arg., a species that I do not believe is distinct from *F. glandulosa*. The ample material at hand is somewhat variable, however, and it is possible that it represents more than a single species, although no lines of segregation are now apparent.

Faramea Harmsiana Standl. Field Mus. Bot. 11: 207. 1936.

A shrub 1.5 meters high, glabrous throughout, the branchlets acutely quadrangular; stipules sheathing, 1 cm. long, the lobes obtuse or rounded and mucronate; leaves large, short-petiolate, firm-papyraceous, the blades oblong-elliptic, 26 cm. long and 11

cm. wide, abruptly short-acuminate, acute or subacute at the base, the lateral nerves about 16 pairs, diverging at almost a right angle; inflorescence cymose-corymbose, pedunculate, the flowers short-pedicellate; calyx cupular, 0.5 mm. long; corolla pale blue, the slender tube 7–9 mm. long, the 4 lobes lance-oblong, 4–5 mm. long, acute.

Loreto: Upper Marañón, mouth of Río Santiago, upland forest, 160 meters, *Tessmann 4570*, type.

Faramea maynensis Spruce ex B. & H. Gen. Pl. 2: 121. 1873, nomen; ex Rusby, Bull. N. Y. Bot. Gard. 4: 300. 1907. *Rudgea scandens* Krause, Bot. Jahrb. 40: 342. 1908.

A glabrous shrub with slender branches, said to be sometimes scandent; stipules green, connate into a narrow and commonly persistent sheath; leaves short-petiolate, usually thin, oblong or narrowly oblong, less often obovate-oblong, caudate-acuminate, acute or obtuse at the base; inflorescence usually many flowered, cymose-corymbose, sessile or pedunculate, the flowers slender-pedicellate; corolla blue, 12–17 mm. long, the lobes equaling or shorter than the tube; fruit 10–14 mm. wide. Negs. 687, 836, 22810.

Ayacucho: Kimpitiriki, 400 meters, *Killip & Smith 23000*.—Huánuco: Below Posuso, *Tessmann 3905*.—Junín: Chanchamayo Valley, 1,200–1,500 meters, *Schunke 322, 428*. La Merced, 1,000 meters, open forest, *Weberbauer 1814*, type of *Rudgea scandens*.—Loreto: Yurimaguas, *Williams 7820*. Mainas, *Poeppig 2010*. La Victoria, on the Amazon, in forest, *Williams 2710, 2766*. Fortaleza, 140 meters, *Klug 2783*. Balsapuerto, 220 meters, *Klug 2916*. Caballo-cocha, *Williams 2208, 2107, 2262a, 2485, 2361*. San Antonio, 135 meters, *Tessmann 3785*; *Killip & Smith 29441*.—San Martín: Near Tarapoto, *Spruce 4946*, type collection. Río Mayo, *Spruce 4612*. Also in Bolivia, Ecuador, Brazil, and Colombia.

Faramea miconioides Standl. Field Mus. Bot. 8: 178. 1930.

A glabrous shrub 1 meter high with stout branches; stipules connate into an elongate sheath, 3.5–4 cm. long; leaves short-petiolate, subcoriaceous, the blades elliptic-oblong or obovate-oblong, 14–16 cm. long, 5.5–6.5 cm. wide, short-acuminate, acute at the base; nerves about 19 pairs, divergent at almost a right angle; inflorescence sessile, cymose-paniculate, many-flowered, 4.5 cm. long, the pedicels 3 mm. long; calyx lobes linear-oblong, obtuse; corolla blue, in bud 5 mm. long.

Junín: Dos de Mayo, Pichis Trail, 1,800 meters, dense forest, *Killip & Smith 25808*, type.—Without locality: *Poeppig 2062*.

Noteworthy for the extreme development of the stipules.

Faramea occidentalis (L.) A. Rich. Mém. Soc. Hist. Nat. Paris 5: 176. 1834. *Ixora occidentalis* L. Syst. Nat. ed. 10. 2: 893. 1759. *F. odoratissima* DC. Prodr. 4: 496. 1830.

A slender, glabrous shrub or small tree; stipules small, short, aristate; leaves short-petiolate, oblong or lance-oblong, short-acuminate, acute or attenuate at the base, rather thin, usually blackish when dried; inflorescences terminal and axillary, few-flowered, usually corymbose, sometimes umbellate, the flowers long-pedicellate, white, fragrant; corolla glabrous, 2 cm. long, the linear-lanceolate lobes equaling or longer than the tube; fruit 1.5 cm. broad.

San Martín: Juan Jui, Alto Río Huallaga, 400 meters, in forest, *Klug* 3877. Ranging to Mexico and the West Indies.

Faramea phyllonomoides Standl. Field Mus. Bot. 4: 332. 1929.

A glabrous shrub or small tree with slender branches; stipules sheathing, persistent; leaves almost sessile, firm-membranaceous, narrowly elliptic-oblong or oblanceolate-oblong, 6–10.5 cm. long, 1.7–3.5 cm. wide, caudate-acuminate, acute or obtuse at the base; inflorescence cymose-paniculate, sessile, laxly few-flowered, the flowers mostly subumbellate, the pedicels 2–6 mm. long; calyx teeth remote, triangular-subulate.

Junín: Chanchamayo Valley, 1,500 meters, *Schunke* 277 (type), 439. Above San Ramón, 1,300–1,700 meters, *Schunke* A24.

It is questionable whether this is distinct from *F. maynensis*.

Faramea quinqueflora P. & E. Nov. Gen. & Sp. 3: 28. pl. 234. 1845. *Coussarea bryoxenos* Schum. & Krause, Verh. Bot. Ver. Brandenb. 50: 116. 1908.

A glabrous shrub or small tree 1–7.5 meters high, with slender branches; stipules connate into a narrow, persistent sheath, the lobes aristate; leaves thin, short-petiolate, oblong or narrowly lance-oblong, rather small, caudate-acuminate or attenuate-acuminate, acute or obtuse at the base; flowers umbellate, the umbels few- or many-flowered, the pedicels slender, elongate; calyx obscurely 4-denticulate; corolla pale blue, the slender tube 5–10 mm. long, the narrow lobes of equal length; fruit subglobose or depressed, deep blue to blackish or purple. Negs. 787, 838.

Loreto: Iquitos, edge of forest, *Williams* 8164; *Tessmann* 3695; *Killip & Smith* 27311, 27028. Soledad, 110 meters, in forest, *Killip & Smith* 29740, 29780, 29820. Pampas de Ponasa, *Ule* 6777, type

of *Coussarea bryoxenos*. Santa Ana, *Williams 1240*. Punchana, in forest, *Williams 3760*. Santa Rosa, *Killip & Smith 28948*. Mishu-yacu, 100 meters, *Klug 1052, 1554*.—San Martín: Type from forests of Misión Tocache, *Poeppig* (photo. seen of *Poeppig 2010 ex hb. Berol.*). Tarapoto, *Williams 5750; Spruce 4296*. Also in Colombia.

Faramea rectinervia Standl. Field Mus. Bot. 8: 177. 1930.

A small, glabrous tree; stipules broadly ovate, 7–9 mm. long, short-cuspidate; leaves short-petiolate, subcoriaceous, the blades oval or elliptic-oblong, 15–22 cm. long, 6.5–11 cm. wide, abruptly cuspidate from the obtuse or rounded apex, obtuse to almost rounded at the base; inflorescence cymose-corymbose, sessile or pedunculate, 4.5–14 cm. long and broad, the flowers cymulose or subumbellate, on pedicels 1–5 mm. long; calyx truncate and distantly denticulate; corolla in bud 11–13 mm. long, the lobes equaling the tube; fruit depressed-globose, 7–10 mm. broad, bright blue.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith 26418, 26582*.—Loreto: Yurimaguas, in 1830, *Poeppig*. La Victoria on the Amazon, in forest, *Williams 2962*, type. Rancho Indiana, Distrito de Iquitos, 110 meters, overflowed creek bank, *Mexia 6318*; a shrub of 2 meters, the corolla blue.

Faramea subsessilis (R. & P.) Standl., comb. nov. *Coffea subsessilis* R. & P. Fl. 2: 64. pl. 215, f. b. 1799.

A glabrous shrub 3.5 meters high; stipules connate, acuminate; leaves subsessile, obovate-oblong, acuminate, coriaceous, subcordate at the base, shining above, very conspicuously veined; inflorescence much branched, many-flowered, the flowers ternate, long-pedicellate; fruit oval, red, turning dark violet, as large as a cherry.

Huánuco: Type from forests of Chinchao, *Ruiz & Pavón*.

I have seen no material representing this species, but the original illustration seems to show a plant almost certainly referable to the genus *Faramea*.

66. PAGAMEA Aubl.

Trees or shrubs; stipules connate into a sheath, deciduous; leaves opposite, petiolate, coriaceous; flowers small, glomerate, the clusters arranged in spikes or racemes or thyriform panicles, chiefly 4-parted; calyx tubular-campanulate, persistent, dentate; corolla funnelform, the tube very short, the lobes spreading, paleaceous-villous within, valvate in bud; anthers subsessile, linear, semiexserted; ovary almost free, 2–5-celled, the ovules solitary; fruit drupaceous, some of the cells often abortive.

Pagamea guianensis Aubl. Pl. Guian. 1: 113. 1775. *Psychotria Macbridei* Standl. Field Mus. Bot. 8: 68. 1930.

A shrub 1.5–2.5 meters high, densely leafy; stipules 8–10 mm. long, subulate-acuminate, brown; leaves on stout petioles, coriaceous, the blades usually fuscous when dried, obovate-oblong or elliptic-oblong, 5–11 cm. long, long-acuminate, narrowed toward the base and long-decurrent, paler beneath, sparsely pilose or almost glabrous except for tufts of hairs in the axils of the nerves; inflorescence simple or branched, densely many-flowered; calyx 1 mm. long, the teeth acute or obtuse; corolla white, 5 mm. long, glabrous outside; fruit subglobose, glabrous, usually 2-celled, black at maturity.

Junín: La Merced, 1,200 meters, in forest, 5785, type of *Psychotria Macbridei*.—Loreto(?): Cerro de Isco, Río Huallaga, *Ule* 64.—Without locality: *Poeppig* 2984. Brazil and the Guianas.

Although referred by most recent authors to the Rubiaceae, this genus has been placed more often, perhaps, in the Loganiaceae, and it is probable that it should be removed permanently from the Rubiaceae.

67. **STACHYOCOCCUS** Standl., gen. nov.

Frutices, ramis crassiusculis obtuse tetragonis; folia ampla opposita breviter petiolata chartacea vel subcoriacea; inflorescentia terminalis spicata elongata, floribus bracteatis in glomerulos dense multifloros remotos dispositis, arcte sessilibus, hermaphroditis, paribus glomerulorum bractea breviter vaginante patelliformi subtectis; hypanthium minutum, calyce campanulato obsolete denticulato; corolla alba in alabastro obtusa extus minute puberulotomentella, tubo cylindraceo intus glabro, lobis in alabastro valvatis obtusis apice subcucullatis; stamina prope basin tubi inserta, filamentis brevibus filiformibus glabris, antheris dorsifixis oblongo-linearibus; ovarium biloculare, loculis 1-ovulatis, ovulis basi loculorum fixis erectis; fructus baccatus, pyrenis 2 non connatis; semina copiose albuminosa facie ventrali profunde anguste sulcata.

Type species, *Stachyococcus adinanthus* Standl.

Stachyococcus adinanthus Standl., comb. nov. *Retiniphyllum adinanthum* Standl. Field Mus. Bot. 8: 355. 1931.

A shrub 3–4.5 meters high, the branches glabrous; stipules unknown; leaves short-petiolate, the blades oblong-elliptic or oblanceolate-oblong, as much as 27 cm. long and 11.5 cm. wide but mostly narrower, somewhat rounded at the apex and abruptly

cuspidate-acuminate, acute at the base, glabrous, paler beneath, the nerves about 12 on each side; spikes about 13 cm. long and 12 mm. thick, the rachis minutely puberulent; calyx 2.2 mm. long, minutely puberulent; corolla obtuse in bud, the tube 4.5 mm. long, the 5 lobes spreading, narrowly oblong, obtuse, 3.5 mm. long.

Loreto: Mishuyacu, near Iquitos, in clearing, 100 meters, *Klug 988*, type.—Brazil: Igarapé das Pedras, Rio Tapajoz, State of Pará, *Ducke 23125* (Jard. Bot. Rio de Janeiro). Near mouth of Rio Embira, Amazonas, *Krukoff 4900, 4682*.

When this plant was first described by the writer, only flowering specimens were available for study, and it was impossible to do better than refer it to *Retiniphyllum*, a group with which actually it has no affinities. The fruiting specimens collected by Krukoff show that it is referable without question to the tribe Psychotrieae. The fruit is strikingly like that of coffee in general appearance, but the plant's relationship is with the genus *Psychotria*. That is so vast a group, with such a wide range of characters, that it is difficult to assign distinctive characters to *Stachyococcus*. However, in its general appearance *Stachyococcus* bears no close resemblance to any species of *Psychotria* with which I am familiar, the form of the inflorescence alone being sufficient to distinguish it, and I suspect that the differences between the two genera are important ones.

68. GEOPHILA Don

Creeping herbs; leaves long-petiolate, ovate-cordate or rounded-cordate, herbaceous; flowers small, in terminal, pedunculate, few-flowered heads, the heads subtended by 2 free bracts; calyx dentate or lobate; corolla tubular-funnelform, pilose in the throat; stamens 4-7, inserted in the corolla tube, the filaments filiform; ovary 2-celled; fruit fleshy, drupaceous, the 2 nutlets plano-convex, dorsally compressed, usually costate.

Ovary densely villous. Leaves acute, villous-hirsute on both surfaces.....*G. trichogyne*.

Ovary glabrous or nearly so.

Leaves broadly rounded or very obtuse at the apex, glabrous except beneath along the costa.....*G. herbacea*.

Leaves acute or acuminate.

Leaf blades glabrous.....*G. macropoda*.

Leaf blades pilose on the upper surface.....*G. gracilis*.

Geophila gracilis (R. & P.) DC. Prodr. 4: 537. 1830. *Psychotria gracilis* R. & P. Fl. 2: 63. pl. 211, f. c. 1799.

Stems very slender; stipules ovate, acute; leaves long-petiolate, the blades ovate-cordate, mostly 2–3 cm. long, acute or acuminate, thin, glabrous beneath; heads 6–9-flowered, the flowers short-pedicellate; calyx lobes linear-lanceolate; corolla pale violet; fruit ovate, blackish or red.

Huánuco: Type from Pillao and Pueblo Nuevo, Ruiz & Pavón (photo. seen, ex hb. Berol.).—Loreto: Yurimaguas, Ule 6762.—San Martín: Tocache, Poeppig 1870. Also in Brazil.

It is questionable whether this is more than a form of *G. herbacea*.

Geophila herbacea (Jacq.) Schum. in E. & P. Nat. Pfl. 4, pt. 4: 119. 1891. *Psychotria herbacea* Jacq. Enum. Pl. Carib. 16. 1760. *Mapouria herbacea* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 427. 1881.

A slender, creeping perennial; stipules 1.5 mm. long, obtuse; leaves long-petiolate, the blades rounded-ovate or subreniform, deeply cordate at the base, usually 3–4 cm. long, nearly glabrous; heads long-pedunculate, usually 3–5-flowered; calyx lobes lanceolate, acuminate; corolla white or purplish, often 1 cm. long; fruit red or almost black, 5 mm. long, usually spirally twisted.

Amazonas: Boca de Yarina, Tessmann 3496.—Ayacucho: Near Kimpitiriki, 400 meters, dense forest, Killip & Smith 22902.—Junín: La Merced, 600 meters, in forest, 5273, 5502. Chanchamayo Valley, 1,200 meters, Schunke 355.—Loreto: La Victoria, on the Amazon, in pasture, Williams 2657, 2860. Forest between Río Nanay and Río Napo, Williams 688. Puerto Arturo, along paths and in fields, Williams 5178, 5324; Killip & Smith 27758. Santa Rosa, in pasture, Williams 4806. Iquitos, in forest, Williams 8048; Killip & Smith 27404. Mishuyacu, in clearing, Klug 492, 1147. San Antonio, Río Itaya, 110 meters, Killip & Smith 29499.—San Martín: Tarapoto, Williams 6009. Generally distributed in tropical America, usually at low elevations; often a weed in cultivated ground.

Geophila macropoda (R. & P.) DC. Prodr. 4: 537. 1830. *Psychotria macropoda* R. & P. Fl. 2: 63. pl. 211, f. b. 1799. *P. cordifolia* Dietr. Gaertn. Lex. 1: 618. 1802–1810. *Coccocypselum macropodum* Britton, Bull. Torrey Club 18: 107. 1891.

A nearly glabrous, creeping herb; stipules ovate; leaf blades broadly cordate-ovate, acute; petioles at first pubescent; heads

3-6-flowered, the flowers subsessile; calyx lobes subulate; fruit oval, purplish black, the nutlets smooth.

Huánuco: Type from forests of Iscutuna, near Pillao, *Ruiz & Pavón*.

I have seen no material of this species, which probably is only a form of *G. herbacea*.

Geophila trichogyne (Muell. Arg.) Standl. Field Mus. Bot. 7: 423. 1931. *Mapouria trichogyne* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 426. 1881.

A large, creeping herb, copiously villous-hirsute throughout with long, slender, spreading hairs; leaves long-petiolate, the blades oblong-cordate to broadly ovate-cordate, 3-11 cm. long, acuminate to acutish, deeply cordate at the base, paler beneath; peduncles usually shorter than the petioles, 5-8-flowered; calyx lobes lance-linear; corolla white; fruit red or orange-red.

Junín: Cahuapanas, 340 meters, dense forest, *Killip & Smith 26780*.—Loreto: Caballo-cocha, on the Amazon, in forest, *Williams 2110*. La Victoria, on the Amazon, edge of forest, *Williams 2909*. Fortaleza, Yurimaguas, in forest, *Williams 4246*. Pisco, Alto Río Nanay, *Williams 1285*. Yurimaguas, *Ule 6763*. Mishuyacu, 100 meters, *Klug 1423*.—Without locality: *Poeppig 2242*. Also in Amazonian Brazil and in Venezuela and Colombia.

69. CEPHAELIS Sw.

Shrubs or small trees, sometimes herbs; stipules free or connate, usually persistent; leaves opposite; flowers capitate, subtended by an involucre of usually sessile, free or connate, often colored bracts, the heads terminal or axillary, simple or branched; calyx short or elongate, 4-7-dentate, persistent; corolla funnelform or salverform, the tube straight, commonly elongate, the throat villous or naked, the lobes 4-5, valvate in bud; stamens inserted in the throat of the corolla, the filaments usually short, the linear anthers included or exserted; ovary normally 2-celled; fruit drupaceous, containing 2 hard, smooth or costate nutlets, these usually longitudinally sulcate on the inner face.

The genus is scarcely a natural one, there being no sharp line of demarcation between it and *Psychotria*. For the most part, however, it is possible to refer a species readily to one or the other group, and since both genera are large ones, it seems desirable to recognize *Cephaelis* as distinct, merely as a matter of convenience.

Flower heads compound or simple and umbellate; bracts subtending the inflorescence broad.

Leaves densely pubescent beneath.....*C. Schunkeana*.

Leaves glabrous beneath except sometimes on the costa.

Leaf blades membranaceous, purple beneath when dry, mostly 9–11 cm. wide.....*C. pebasensis*.

Leaf blades thick-coriaceous, not purplish beneath, mostly 6 cm. wide or less.

Inflorescence trichotomous, the bracts at its base 1.5 cm. long.....*C. Schraderoides*.

Inflorescence of 4–5 umbellate heads, the bracts short and inconspicuous.....*C. umbellata*.

Flower heads simple, solitary, the bracts at their base sometimes linear.

Bracts subtending the heads linear or lance-linear. Plants with sparse or dense, spreading pubescence.

Leaves glabrous beneath or nearly so, ciliate, often hirsute on the costa.....*C. blepharophylla*.

Leaves copiously hirsute or pilose beneath.

Flower heads sessile.....*C. iodotricha*.

Flower heads short-pedunculate.....*C. trichocephala*.

Bracts subtending the heads chiefly ovate or broader.

Flower heads axillary, sessile or practically so.....*C. leucantha*.

Flower heads terminal or, if axillary, conspicuously pedunculate.

Flower heads small, in flower less than 1.5 cm. broad, commonly about 1 cm. broad; leaves glabrous or practically so.

Leaf blades oblong-linear to linear-lanceolate, 7–17 mm. wide.....*C. Oleandrella*.

Leaf blades oblong to elliptic-oblong, chiefly 2–6 cm. wide.

Stipules deeply bilobate, with subulate lobes.....*C. Killipii*.

Stipules not bilobate.

Heads in flower 6–7 mm. wide, much longer than broad, slender-pedunculate; petioles 7–10 mm. long.....*C. Williamsii*.

Heads in flower 1 cm. wide or larger, nearly or quite as broad as long, on thick, stout peduncles; petioles chiefly 15 mm. long or more.....*C. flaviflora*.

Flower heads large, usually much more than 2 cm. wide; leaves often copiously pubescent.

Leaves purple or purplish beneath. *C. oinochrophylla*.

Leaves green beneath.

Stipules neither bilobate nor biaristate. Leaves glabrous.

Bracts subtending the flower head 3-4 cm. long.

C. dolichophylla.

Bracts about 1 cm. long. *C. affinis*.

Stipules deeply bilobate or at least biaristate.

Stipules ovate, 6-7 mm. long, shortly biaristate at the apex or truncate and biaristate.

Bracts violaceous, 14-16 mm. long. . . *C. acreana*.

Bracts green, 20-25 mm. long. *C. bella*.

Stipules deeply bilobate, 1-1.5 cm. long or larger.

Bracts free or nearly so.

Bracts dark red, usually broader than long.

C. rosea.

Bracts whitish, longer than broad. . *C. pubescens*.

Bracts long-connate.

Hairs along the costa on the lower surface of the leaf appressed. *C. barcellana*.

Hairs of the costa spreading. . . . *C. tomentosa*.

Cephaelis acreana Krause, Notizbl. Bot. Gart. Berlin 6: 211. 1914.

A shrub, the branches glabrous; stipules ovate, biaristate; leaves short-petiolate, firm-membranaceous, the blades lanceolate to ovate-oblong, 9-12 cm. long, about 4 cm. wide, long-acuminate, acute at the base, glabrous or almost so; flower heads terminal, on rather short peduncles; bracts rounded-ovate, short-acuminate, 14-16 mm. long, violaceous when dry; corolla yellowish white, the tube 8 mm. long; fruit blue, costate, 5-6 mm. long. Neg. 713.

Loreto: Seringal Auristella, Alto Río Acre, *Ule* 9856, type (photo. and fragm. seen, ex hb. Berol.).

Cephaelis affinis Standl. Field Mus. Bot. 8: 184. 1930.

A glabrous shrub 1-2 meters high; leaves long-petiolate, the blades thick, oblong-elliptic, 19-30 cm. long, 8.5-14 cm. wide, abruptly acuminate, acute at the base; heads terminal, long-pedun-

culate, 2.5 cm. broad in fruit; bracts green, 8 mm. long and 12 mm. wide, broadly rounded at the apex; fruits pedicellate, subglobose, 8–9 mm. long, deep purple, the nutlets costate dorsally.

Loreto: Between Yurimaguas and Balsapuerto, dense forest, *Killip & Smith 28329*, type.

Cephaelis barcellana (Muell. Arg.) Standl. Field Mus. Bot. 8: 184. 1930. *Psychotria barcellana* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 369. 1881.

A shrub 1–2 meters high, or often chiefly herbaceous, the branches hirsute; leaves short-petiolate, membranaceous, the blades oblong-elliptic to lanceolate, long-acuminate, acute at the base; heads terminal, solitary, on short or elongate peduncles; bracts bright purplish red, 3–5 cm. long, acute or acuminate, sometimes with green tips, connate, saccate at the base; corollas yellow, sericeous; fruits bright blue.

Loreto: Lower Río Nanay, *Williams 341, 682, 714*. Marana, *Williams 1381*. Pinto-cocha, *Williams 782*. Caballo-cocha, in forest, *Williams 2323, 2069*. Pebas, *Williams 1690, 1683, 1692, 1624*. Florida, 180 meters, in forest, *Klug 2227*. Punchana, *Williams 1326, 1329*. Tira Doble, edge of stream, *Williams 1075*. Masisea, Río Ucayali, *Tessmann*. Iquitos, edge of forest, *Williams 3685*; in forest or clearings, *Killip & Smith 26970, 27377, 26931*. Ranging to Brazil, Venezuela, and Colombia. "Usiya-puiño" (Huitoto name).

"Awa," "picho sisa." In general appearance the plant is exactly like *C. tomentosa*, of which it may be only a form or variety. The only important differences between the two species are in the nature of the pubescence. Employed, according to Klug, "as a remedy for burns."

Cephaelis bella Standl. Field Mus. Bot. 8: 372. 1931.

A glabrous shrub with slender branches; stipules 2–2.5 mm. long; leaves petiolate, bright green, firm-membranaceous, the blades elliptic to ovate-elliptic or oblong-elliptic, 9.5–13.5 cm. long, acute, at the base acute or acuminate; heads terminal, short-pedunculate; bracts ovate-orbicular, green, acute or rounded and mucronate, broadly rounded or truncate at the base; calyx obscurely denticulate; corolla glabrous, the tube 9–13 mm. long.

Loreto: Puerto Arturo, Yurimaguas, in forest, *Williams 5207* (type), 5071.

Noteworthy for the bright green color of dried specimens and for the large, green bracts.

Cephaelis blepharophylla Standl. Field Mus. Bot. 8: 182. 1930.

An herb or shrub 30–50 cm. high, erect or decumbent and rooting at the lower nodes, the stems sparsely villous-pilose or glabrate; stipule sheath truncate, the lobes linear-attenuate, 4–10 mm. long, ciliate; leaves petiolate, the blades elliptic-oblong to broadly elliptic, 7–15 cm. long, 2.5–7 cm. wide, abruptly acuminate, acute or abruptly decurrent at the base, long-ciliate; inflorescences terminal, capitate or densely cymose, the peduncles 5–10 mm. long, the heads 1.5–3 cm. broad; bracts parted almost to the base into linear, villous-ciliate segments; calyx minutely denticulate; corolla yellowish lilac, almost glabrous, the slender tube 13 mm. long, not barbate in the throat; fruit blue, subglobose, 5 mm. long, glabrous.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 59. Soledad, Río Itaya, 110 meters, dense forest, *Killip & Smith* 29798. Also in Amazonian Brazil.

Cephaelis dolichophylla Standl. Field Mus. Bot. 4: 334. 1929.

A shrub with thick branchlets; stipules ovate-triangular, acuminate, 2 cm. long; leaves short-petiolate, the blades thick, oblanceolate-oblong to elliptic-oblong, 22–30 cm. long or larger, 4.5–15 cm. wide, long-acuminate or abruptly short-acuminate, attenuate to the base, glabrous; heads terminal, long-pedunculate, densely many-flowered; outer bracts broadly ovate, 3–4 cm. long, short-connate, acute, pink or deep red; fruit black, 5–7 mm. long or larger; calyx truncate.

Loreto: Near Yurimaguas, *Spruce* 3876, type; 135 meters, in dense forest, *Killip & Smith* 28027. Also in Matto Grosso, Brazil.

Cephaelis flaviflora (Krause) Standl. Field Mus. Bot. 8: 184. 1930. *Uragoga flaviflora* Krause, Bot. Jahrb. 40: 344. 1908.

A glabrous shrub or tree 2.5–6 meters high with rather slender branches; stipules broadly ovate, connate, 5–6 mm. long, obtuse or emarginate, persistent; leaves petiolate, coriaceous, the blades narrowly oblong to elliptic-obovate, 12–17 cm. long, caudate-acuminate, acute to attenuate at the base, with numerous lateral nerves; heads terminal, on short or elongate, stout peduncles; bracts yellow or orange, 8–10 mm. long, rounded at the apex or sometimes acutish; calyx obsoletely dentate; corolla yellow or pale yellow, glabrous,

16–18 mm. long, sometimes white; fruit brownish red; fruiting heads as much as 2.5 cm. broad. Neg. 742.

Huánuco: Between Monzón and Huallaga, 700 meters, *Weberbauer* 3686, type (photo. and fragm. seen, ex hb. Berol.).—Junín: Santa Rosa, 625–900 meters, dense forest, *Killip & Smith* 26180, 26186. San Nicolás, 1,100 meters, dense forest, *Killip & Smith* 26002, 25982.—Loreto: Below Pongo de Manseriche, 155 meters, *Tessmann* 3887. Pumayacu, 600–1,200 meters, *Klug* 3147.

Cephaelis iodotricha (Muell. Arg.) Standl. Field Mus. Bot. 7: 427. 1931. *Psychotria iodotricha* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 375. 1881.

A shrub 1–3.5 meters high, or sometimes merely herbaceous or suffrutescent, the branches hirsute with bluish hairs; stipules 4 mm. long, bifid; leaves subsessile, lance-oblong to ovate-oblong, 5–12 cm. long, long-acuminate, obtuse to rounded at the base; heads chiefly terminal, about 5-flowered; bracts deeply 5–8-fid, the segments setaceous-attenuate, hirsute with long, purplish hairs; calyx setaceous-laciniate like the bracts; corolla greenish white, hirsute. Neg. 22834.

Loreto: Lower Río Nanay, in forest, *Williams* 712. La Victoria, in forest, *Williams* 2716, 2994. Caballo-cocha, in forest, *Williams* 2352. Pebas, *Williams* 1703, 1687, 1630. Between Yurimaguas and Balsapuerto, 140 meters, dense forest, *Killip & Smith* 28697. Also along the Amazon in Brazil and in French Guiana.

Cephaelis Killipii Standl. Field Mus. Bot. 8: 187. 1930.

A shrub 1–3.5 meters high, glabrous except about the inflorescence; stipules 4 mm. long, bilobate to the middle; leaves short-petiolate, the blades oblong to obovate-oblong, 9–18 cm. long, abruptly acuminate, acute or attenuate at the base; heads terminal, on peduncles 1.2–2 cm. long, few-flowered, the outer bracts broadly ovate, 8 mm. long, abruptly long-acuminate, green, ciliate; calyx tubular, 4 mm. long, 5-fid; fruit red, subglobose, 8–9 mm. long, the nutlets almost smooth dorsally.

Loreto: San Antonio, on Río Itaya, 110 meters, dense forest, *Killip & Smith* 29303 (type), 29425. Soledad, *Killip & Smith* 29624. San Antonio, Alto Itaya, *Williams* 3477, 3394.

Cephaelis leucantha (Krause) Standl. Field Mus. Bot. 11: 191. 1936. *Uragoga leucantha* Krause, Bot. Jahrb. 40: 345. 1908.

A shrub 2.5 meters high, or sometimes lower and herbaceous or suffrutescent, the stems glabrous; stipules connate into a truncate sheath 3-4 mm. long; leaves rather short-petiolate, the blades elliptic-obovate to oblanceolate-oblong, 20-30 cm. long, 6-12 cm. wide, acute or short-acuminate, acute or attenuate at the base, sparsely pilose beneath or glabrate, thin; heads axillary, sessile or short-pedunculate, the bracts broadly ovate, acutish, glabrous; calyx 5-dentate; corolla white, glabrous, 6-7 mm. long. Neg. 754.

Huánuco: Between Monzón and Huallaga, 600 meters, *Weberbauer* 3668, type (photo. and fragm. seen, ex hb. Berol.).—Junín: Cahuapanas, 340 meters, dense forest, *Killip & Smith* 26759.—Loreto: San Antonio, Río Itaya, 110 meters, dense forest, *Killip & Smith* 29527, 29362. Mouth of Río Santiago, upper Marañón, 160 meters, upland forest, *Tessmann* 4093, 4330.

The plant should probably be referred rather to the genus *Psychotria*.

***Cephaelis olnochrophylla* Standl. Field Mus. Bot. 8: 372. 1931.**

A shrub 1.5 meters high, branched, the branches glabrous; stipules broadly ovate, 1-1.5 cm. long, abruptly acuminate, glabrous, short-bifid at the apex; leaves short-petiolate, the blades elliptic-oblong, 15-20 cm. long, 4.5-7.5 cm. wide, short-acuminate, acute at the base, glabrous above, beneath red-purple in the dried state, minutely puberulent on the costa, elsewhere glabrous; inflorescence terminal, long-pedunculate, composed of 3 dense, sessile or very shortly pedunculate heads, the outer bracts rounded, 10-12 mm. long, broadly rounded or apiculate at the apex; corolla tube 8-9 mm. long, the lobes 1 mm. long.

Loreto: Tierra Blanca, lower Río Morona, middle Marañón, 160 meters, in forest, *Tessmann*, 4913, type.

The collector supplies the following notes: Bracts more or less deep brownish lilac; peduncles often almost wholly lilac; lower leaf surface colored a beautiful lilac; corolla white. The species may be recognized at once by the brightly colored under surface of the leaf blades.

***Cephaelis Oleandrella* Standl. Field Mus. Bot. 4: 334. 1929.**

A shrub 1-3.5 meters high, glabrous almost throughout, with slender branches; stipule sheath 1-3 mm. long, the subulate lobes 1-2 mm. long; leaves short-petiolate, the blades 4-8.5 cm. long, narrowly long-acuminate, the costa beneath bordered by a ribbon-like, ciliate membrane; heads long-pedunculate, terminal, 7-9 mm.

wide; outer bracts broadly ovate, 6–7 mm. long, acuminate, ochroleucous, ciliate; calyx 5-lobate; corolla ochroleucous, glabrous, 9 mm. long; fruit orange or red.

Junín: La Merced, 1,200 meters, on montaña slope, *Macbride 5635*, type. Above San Ramón, 1,300–1,700 meters, *Schunke A30*; *Killip & Smith 24606*. Dos de Mayo, 1,800 meters, dense forest, *Killip & Smith 25816*. Yapas, 1,500 meters, dense forest, *Killip & Smith 25491*. Chanchamayo Valley, *Schunke 410*.

Cephaelis pebasensis Standl. Field Mus. Bot. 8: 186. 1930.

A shrub with stout, glabrate branches; stipules persistent, 1.5 cm. long, bilobate, the lobes semiovate, acutish; leaves petiolate, chartaceous, the blades oblong-elliptic, 14–26 cm. long, 5–11 cm. wide, abruptly short-acuminate, abruptly decurrent at the base, glabrous above, sparsely pilosulous beneath along the costa; inflorescence terminal, short-pedunculate, composed of 3–5 umbellate or short-racemose heads, the basal bracts broadly ovate, obtuse, 1–1.5 cm. long, the heads 1.5 cm. in diameter; calyx 2–3 mm. long, 5-fid; fruit oblong, 5–6 mm. long, sparsely pilosulous.

Loreto: Pebas, on the Amazon, in forest, *Williams 1786* (type), 1657.

Cephaelis pubescens Hoffmannsegg ex R. & S. Syst. Veg. 5: 213. 1819.

A more or less branched shrub; leaves large, thin, narrowly lanceolate or oblong-lanceolate, acuminate or long-attenuate, acute to attenuate at the base, pubescent, especially on the upper surface, short-petiolate; heads very large, terminal, long-pedunculate, the outer bracts cordate-ovate or lance-ovate, long-acuminate, usually pale and whitish near the base, sometimes purple-red, acute to long-acuminate; corolla 5 mm. long; fruit blue, 3 mm. long. Neg. 764.

Loreto: Florida, Río Putumayo, 200 meters, in forest, *Klug 2038*. Colombia, the Guianas, and northern Brazil.

Cephaelis rosea Benth. in Hook. Journ. Bot. 3: 224. 1841. *Psychotria rosea* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 360. 1881.

A nearly glabrous shrub; stipules deeply bifid, with linear-attenuate lobes; leaves petiolate, the blades ovate-lanceolate to elliptic-oblong, 12–20 cm. long, long-acuminate, acute or attenuate at the base; heads terminal, rather short-pedunculate, 2.5–3.5 cm. wide, the outer bracts often broader than long, cordate-ovate,

acute or obtuse, green or purplish; calyx 5-fid; corolla nearly glabrous, 7 mm. long or larger. "Yaku-sisa blanca," "sufia."

Loreto: Río Nanay, in forest, *Williams* 765. Timbuchi, Alto Nanay, *Williams* 997. Also in Brazil, Venezuela, and the Guianas.

Cephaelis Schraderoides (Krause) Standl. Field Mus. Bot. 11: 191. 1936. *Uragoga Schraderoides* Krause, Bot. Jahrb. 40: 344. 1908.

A glabrous shrub 2 meters high; stipules connate into a sheath 4-5 mm. long, bifid at the apex; leaves short-petiolate, oblong or obovate-oblong, 8-13 cm. long, 3.5-5.5 cm. wide, coriaceous, acute or acuminate, acute at the base; inflorescence terminal, consisting of 3 pedunculate heads; bracts narrowly ovate, acute; calyx lobes ovate-triangular; corolla white, its tube 6-8 mm. long. Neg. 767.

Loreto: Mountains east of Moyobamba, 1,500 meters, *Weberbauer* 4750, type (photo. and fragm. seen, ex hb. Berol.).

Cephaelis Schunkeana Standl. Field Mus. Bot. 8: 185. 1930.

A shrub 2.5-3.5 meters high, the stout branchlets pilose or glabrate; stipule lobes semiovate, 1 cm. long; leaves long-petiolate, the blades firm-membranaceous, elliptic, 27-32 cm. long, 14-15 cm. wide, abruptly acuminate, acute at the base or abruptly contracted, glabrous above, velutinous-pilosulous beneath; inflorescence terminal, pedunculate, composed of 7 racemosely disposed heads 1-2 cm. long; basal bracts broadly ovate, green, obtuse, 1.5 cm. long; calyx tubular, 4 mm. long or more, glabrous; fruit subglobose, glabrous, 12 cm. long.

Junín: Schunke Hacienda, above San Ramón, 1,400-1,700 meters, dense forest, *Killip & Smith* 24658, type.

Cephaelis tomentosa (Aubl.) Vahl, Eclog. Amer. 1: 19. 1796. *Tapogomea tomentosa* Aubl. Pl. Guian. 1: 160. pl. 61. 1775. *Uragoga tomentosa* Kuntze, Rev. Gen. 1: 301. 1891.

A shrub 1-3 meters high, or sometimes chiefly herbaceous, copiously hirsute or pilose throughout; leaves thin, short-petiolate, the blades lanceolate to ovate-elliptic, large, long-acuminate, acute at the base; heads chiefly terminal, on long or short peduncles, dense and many-flowered, the bracts chiefly 3-5 cm. long, broadly ovate, long-connate above the base, deep red, acute or acuminate, sometimes with long, green tips; corollas yellow; fruit blue. Neg. 772.

Cuzco: Marcapata Valley, 1,200 meters, *Herrera* 1156.—Junín: La Merced, 600 meters, montaña slopes, 5530. Santa Rosa, 625-900 meters, *Killip & Smith* 26159. Colonia Perené, 680 meters,

dense forest, *Killip & Smith 24947*. Above San Ramón, 1,400–1,700 meters, *Killip & Smith 24583*. San Ramón, 900–1,300 meters, edge of woods, *Killip & Smith 24750*. Near La Merced, *Killip & Smith 23847*. Yapas, 1,400 meters, *Killip & Smith 25556*. Puerto Yessup, 400 meters, dense forest, *Killip & Smith 26227*. Chanchamayo Valley, 1,500 meters, *Schunke 449, 242*.—Loreto: Paltacocha, Río Nanay, in forest, *Williams 1258*. Between Yurimaguas and Balsapuerto, 140 meters, *Killip & Smith 28239*. La Victoria, *Williams 2964*. Iquitos, *Williams 3656, 3655, 3654, 3764, 3688*.—San Martín: Tarapoto, *Williams 5640, 5975*. Lamas, *Williams 6399*. San Roque, 1,400 meters, *Williams 7496, 7107*. Ranging from Bolivia and Brazil to southern Mexico.

A handsome plant because of the large flower heads with their bright red bracts, yellow corollas, and blue berries. The plant is common in the lowlands of many parts of tropical America.

Cephaelis trichocephala (P. & E.) Standl. Field Mus. Bot. 8: 375. 1931. *Psychotria trichocephala* P. & E. Nov. Gen. & Sp. 3: 32. pl. 238. 1845. *Uragoga trichocephala* Kuntze, Rev. Gen. 1: 301. 1891.

A low or tall shrub, the branches shortly villous-hirsute; leaves short-petiolate, the blades oblong or lance-oblong, 5–15 cm. long, acuminate, acute to obtuse at the base, sparsely villous above, rather densely pilose beneath with short, soft hairs; inflorescences terminal, solitary, head-like, sometimes trichotomous, the bracts setaceous, hirsute-ciliate; calyx 5-dentate; corolla violaceous and yellow, pilose; fruit dark violet. Neg. 775.

San Martín: Type from Río Tocache, *Poeppig 2039* (photo. seen, ex hb. Berol.). Tarapoto, 750 meters, *Williams 5979*.—Loreto: Pumayacu, 600–1,200 meters, in forest, *Klug 3241*; a shrub of 1 meter, the flowers white and red-violet.

Cephaelis umbellata (R. & P.) Standl. Field Mus. Bot. 7: 301. 1931. *Coffea umbellata* R. & P. Fl. 2: 64. pl. 215, f. a. 1799. *C. Conephoroides* Rusby, Bull. N. Y. Bot. Gard. 4: 372. 1907. *Uragoga Weberbaueri* Krause, Bot. Jahrb. 40: 345. 1908.

A glabrous shrub or tree 5 meters high or less; stipules connate, 5–8 mm. long, rounded at the apex and bidentate; leaves coriaceous, short-petiolate, the blades obovate-oblong to elliptic-oblong, 10–18 cm. long, abruptly acuminate, acute or obtuse at the base, with numerous lateral nerves; flower heads umbellate at the end of a long terminal peduncle, the inflorescence violet; bracts 5–6 mm. long; fruit subglobose, 6 mm. long. Negs. 824, 845.

Huánuco: Described from Cochoero and Chinchao, *Ruiz & Pavón* (photo. of authentic specimen seen, ex hb. Berol.).—Loreto: Type of *U. Weberbaueri* collected near Moyobamba, *Weberbauer 4540*. Also in Bolivia.

Casual reading of the descriptions of *Coffea umbellata* R. & P. and *C. subsessilis* R. & P. will show that the illustrations of the two are transposed in *plate 215*. *Figure a* is evidently the plant described as *Coffea umbellata*, and *figure b* is *Coffea subsessilis*. This confusion seems not to have been discovered by earlier writers.

I have seen no material of *Uragoga Weberbaueri*, but from the description it can not be separated from *Cephaelis umbellata*.

***Cephaelis Williamsii* Standl.** Field Mus. Bot. 8: 185. 1930.

A glabrous shrub or small tree 2–4 meters high with slender branches; stipule sheath truncate, 1 mm. long; leaves slender-petiolate, the blades thick-membranaceous, elliptic-oblong, 5.5–10.5 cm. long, 2–4.5 cm. wide, caudate-acuminate, acute at the base; peduncles terminal or pseudo-axillary, 12–18 mm. long, the 2 basal bracts of the head cochleate, 1 cm. long, short-connate at the base; calyx minute, denticulate; corolla cream-colored; fruit oval-globose, 5–6 mm. long, obtusely costate.

Loreto: Manfinfa, Alto Río Nanay, in forest, *Williams 1114* (type), *1123*. Also in Colombia.

70. DECLIEUXIA HBK.

Perennial herbs or small shrubs, usually erect, usually turning black when dried; stipules subulate-linear, mucroniform, or obsolete, often decurrent; leaves opposite or verticillate, commonly sessile and small; flowers small, cymose, 4-parted; sepals free or nearly so and often distant; corolla funnelform, the lobes valvate; stamens inserted in the throat of the corolla; fruit didymous, indehiscent, 2-celled, with 1 seed in each cell, the cells laterally compressed.

***Declieuxia peruviana* Wernham,** Journ. Bot. 52: 225. 1914.

Suffrutescent, virgately branched, the slender branchlets nearly glabrous; leaves linear, subcoriaceous, about 13 mm. long and 2 mm. wide, obtuse, sessile, glabrous, the margin revolute; stipules triangular, 2 mm. long, acute; inflorescence subcapitate, 1.5–2 cm. broad, the small flowers scarcely 5 mm. long, glabrous.

Amazonas: Type from Chachapoyas, *Mathews*. Known to the writer only from description.

71. RUDGEA Salisb.

Shrubs or small trees; stipules interpetiolar, bearing on the margins or at the apex or on the dorsal surface subulate or aculeoli-form teeth, these commonly pale and somewhat cartilaginous, usually deciduous, the stipules sometimes laciniate; leaves opposite, short-petiolate or sessile, commonly more or less coriaceous; inflorescence terminal, paniculate, cymose, umbellate, or capitate, sometimes reduced to a single flower; calyx segments almost free or variously connate; corolla salverform or funnellform, the lobes valvate in bud; stamens inserted in the corolla tube; fruit baccate, containing 2 one-seeded nutlets.

Calyx enlarged and more or less corolla-like, 1.5–2 cm. long.

R. sororia.

Calyx small and inconspicuous, usually less than 5 mm. long.

Flowers capitate or subcapitate, the heads sessile or stalked.

Heads long-pedunculate *R. retifolia.*

Heads sessile or nearly so.

Inflorescence not involucrate, not subtended by large stipules.

R. sessiliflora.

Inflorescence subtended by large stipules or by foliaceous bracts.

Heads subtended by large, leafy bracts . . . *R. justicioides.*

Heads subtended by large, pectinate-laciniate stipules.

R. cryptantha.

Flowers not capitate, cymose, umbellate, or paniculate.

Stipules large, usually striate, deeply laciniate on the margins.

Leaves large, distinctly petiolate.

Inflorescence thyrsiform; lateral nerves of the leaves almost perpendicular to the costa *R. Woronowii.*

Inflorescence cymose-corymbose; nerves oblique.

Leaves conspicuously pilose beneath *R. Mexiae.*

Leaves glabrous.

Corolla tube very thick and stout *R. obesiflora.*

Corolla tube slender.

Stipules 8–11 mm. long *R. psychotriaefolia.*

Stipules 4–6 mm. long *R. amazonica.*

Stipules inconspicuous, comparatively small, neither striate nor with deeply laciniate margins.

Young branchlets densely pilosulous or hispidulous.

Leaf blades attenuate to the base. *R. angustissima*.

Leaf blades obtuse or rounded at the base.

Corolla 5 mm. long or less; leaves sessile or subsessile.

R. hispidula.

Corolla 2.5 cm. long or larger; leaves conspicuously petiolate. *R. insolita*.

Young branchlets glabrous or finely puberulent.

Calyx 1 cm. wide, with deep, rounded lobes. . . *R. ceriantha*.

Calyx less than 5 mm. wide, not with large, rounded lobes.

Calyx truncate or with scarcely perceptible, truncate or rounded lobes, about 4 mm. wide. . . . *R. loretensis*.

Calyx evidently dentate, usually much less than 4 mm. wide.

Leaves sessile or essentially so. *R. Poeppigii*.

Leaves conspicuously petiolate.

Leaves large, chiefly 7.5-10 cm. wide.

Leaves excavate beneath in the axils of the nerves.

R. foveolata.

Leaves not excavate beneath.

Inflorescence umbelliform, radiately branched.

R. Sprucei.

Inflorescence racemiform, with chiefly opposite branches. *R. racemosa*.

Leaves relatively small, commonly 3-7 cm. wide.

Leaf blades obtuse, subcoriaceous. . . . *R. nitida*.

Leaf blades acuminate or cuspidate.

Leaf blades rounded at the apex and abruptly contracted into an elongate, linear acumination. *R. acuminata*.

Leaf blades gradually acuminate, or abruptly contracted into a triangular acumination.

Corolla and branches of the inflorescence pubescent.

Nerves of the leaves about 13 pairs.

R. microcarpa.

Nerves of the leaves about 9 pairs.

R. stenophylla.

Corolla and branches of the inflorescence
glabrous.

Corolla about 8 cm. long. *R. Klugii*.

Corolla much shorter.

Corolla 11–13 mm. long.

Leaves gradually long-acuminate.

R. tambillensis.

Leaves rounded at the apex and
abruptly short-acuminate.

R. verticillata.

Corolla 7–8 mm. long.

Leaves firm-membranaceous; inflores-
cence short, about as broad as
long; bracts small but conspicuous.

R. ciliata.

Leaves coriaceous; inflorescence thyr-
soid, narrow; bracts minute and
obscure. *R. canephorantha*.

The key presented above is, in large part, an altogether unsatisfactory one, but it is the best that can be made with the available material, which represents all the species listed. All or most of the species are, I believe, valid ones, but some are known only in fruit and others only in flower, consequently it is impossible to compare their corresponding characters.

Rudgea acuminata (R. & P.) Standl. Field Mus. Bot. 7: 327. 1931. *Coffea acuminata* R. & P. Fl. 2: 64. pl. 214, f. b. 1799.

A glabrous shrub 3.5 meters high; stipules ovate, acute, caducous; leaves slender-petiolate, the blades oval-oblong, about 10 cm. long and 4 cm. wide or larger, rounded and caudate at the apex, with a long, linear acumination, acute at the base, barbate beneath in the axils of the nerves; flowers in small, pedunculate, corymbiform panicles, subsessile; calyx dentate; corolla white; fruit oval, red, as large as a cherry. Neg. 801.

Huánuco: Type from forests of Chinchao, Ruiz & Pavón (photo. seen of an authentic specimen, ex hb. Berol.).

The Berlin specimen of which I have seen a photograph is in rather poor condition, with fruit only. It is not at all certain from examination that the plant is a *Rudgea*. At Berlin it has been placed in *Faramea*, but the fruit appears to be decidedly longer

than broad and, if that is the case, it is not a *Faramaea*. Neither does it resemble a *Coussarea*.

Rudgea amazonica Muell. Arg. Flora 59: 449, 460. 1876; in Mart. Fl. Bras. 6, pt. 5: 170. *pl.* 22, *f.* 2. 1881.

A nearly or quite glabrous shrub about 3.5 meters high, with rather stout branches; stipules oblong-ovate, incised-lancinate, deciduous; leaves short-petiolate, subcoriaceous, ovate or elliptic-oblong, 10–17 cm. long, acute or acuminate, acute at the base, the nerves 6–8 pairs; panicles open, few- or many-flowered, pedunculate, the flowers sessile or nearly so; corolla 7–8 mm. long; fruit ellipsoid, usually by abortion 1-seeded, 7–9 mm. long. Neg. 653.

Loreto: La Victoria on the Amazon, in forest, *Williams 2813*. Río Masana near Iquitos, *Williams 23*. Also in Amazonian Brazil and in Bolivia.

Rudgea angustissima Standl. Field Mus. Bot. 11: 259. 1936.

A slender shrub 3–3.5 meters high, the branchlets pilose with minute, spreading hairs; stipules 5–6 mm. long, deeply lacinate, the few lobes subulate; leaves short-petiolate, firm-membranaceous, the blades linear-oblong or narrowly linear-lanceolate, 9–11 cm. long, 15–18 mm. wide, long-attenuate, glabrous above, beneath sparsely and minutely puberulent or glabrate, more densely puberulent on the costa; inflorescence pedunculate, small and few-flowered, about 1 cm. long and broad, the bracts obscure, the flowers aggregate, sessile; hypanthium almost 1 mm. long, glabrate, the calyx minute, remotely repand-denticulate; corolla in immature buds glabrous.

Junín: Puerto Bermúdez, 375 meters, in dense forest, *Killip & Smith 26459*, type.

Rudgea canephorantha (Wernham) Standl. Field Mus. Bot. 11: 268. 1936. *Psychotria canephorantha* Wernham, Journ. Bot. 55: 338. 1917.

A shrub about 3 meters high, glabrous throughout; stipules short and in age indurate, at first bearing outside below the apex a row of short, thickened setae, these often deciduous; leaves short-petiolate, coriaceous, yellowish green, elliptic to oblong, mostly 9–13 cm. long, acute, obtuse or acute at the base, often lustrous; flowers sessile in small cymes, the cymes racemose and forming an often elongate, thyrsoid panicle, the bracts minute and obscure; calyx teeth broadly ovate, acute, short; corolla white, glabrous, 6–7 mm. long; fruit globose-oval, 6 mm. long.

San Martín: Near Tarapoto, *Spruce 4120*, type collection; *Ule 6554*; *Williams 5389, 5820, 6159, 6110, 6511*. Juan Guerra, *Williams 6872*. Juan Jui, 400 meters, in forest, *Klug 3764*.

Rudgea ceriantha Schum. Verh. Bot. Ver. Brandenb. 47: 190. 1905.

A shrub or tree 2–8 meters high with puberulent branches; stipules 12–20 mm. long, bifid, the lobes lanceolate, acuminate; leaves short-petiolate, the blades elliptic-oblong or oblong-obovate, 10–25 cm. long, 4–12 cm. wide, short-acuminate, acute or somewhat attenuate at the base, puberulent beneath; panicles corymbiform, sessile, the bracts ovate, the 5-parted flowers short-pedicellate; calyx lobes large, suborbicular, obtuse, ciliolate; corolla 32 mm. long, with short lobes. Neg. 657.

Loreto: Cerro de Escalera, 1,200 meters, *Ule 6677*, type (photo. seen, ex hb. Berol.).

Examination of a photograph of the type arouses much doubt in the writer's mind as to whether the plant is really a *Rudgea*. It is more likely to prove to be a *Psychotria*.

Rudgea ciliata (R. & P.) Spreng. Syst. Veg. 1: 755. 1825. *Coffea ciliata* R. & P. Fl. 2: 65. pl. 216, f. a. 1799.

A glabrous shrub 3–4 meters high; stipules truncate and at first subulate-ciliate; leaves short-petiolate, thin or subcoriaceous, the blades oblong to oval or obovate, 7–16 cm. long, abruptly acute or acuminate, acute at the base, paler beneath; inflorescence small, paniculate, corymbiform, with opposite or verticillate branches, the flowers sessile or short-pedicellate; calyx teeth minute, subulate; corolla white, 7 mm. long, the oblong lobes recurved, almost equaling the tube; stamens exserted; fruit globose, red, 5–6 mm. long. Neg. 658.

Huánuco: Described from Carpis and Pati, between Chinchao and Acomayo, *Ruiz & Pavón* (photo. of authentic specimen seen, ex hb. Berol.).—San Martín: San Roque, in forest, *Williams 7072, 7657*. Also in Bolivia.

Called "sauco del monte" in Bolivia.

Rudgea cryptantha Standl. Field Mus. Bot. 11: 260. 1936.

A glabrous shrub 2 meters high with slender branches; stipules conspicuous, 1–1.5 cm. long, elliptic, laciniate-dentate, persistent; leaves short-petiolate, membranaceous, the blades narrowly lanceolate or oblong-lanceolate, 9–13 cm. long, 1.5–4 cm. wide, narrowly

attenuate-acuminate, acute at the base; flowers few, white, in terminal, sessile clusters subtended by large, persistent stipules; corolla lobes scarcely half as long as the tube; stamens included.

Loreto: San Antonio, Alto Río Itaya, *Williams 3521*, type. Lower Río Nanay, in forest, *Williams, 707*. Above Pongo de Manseriche, *Meria 6374*.

Rudgea foveolata (R. & P.) Zahlbr. Ann. Naturh. Hofmus. Wien 7: 2. 1892. *Coffea foveolata* R. & P. Fl. 2: 65. pl. 216, f. b. 1799.

A glabrous shrub 3.5 meters high, with rather stout branches; stipules semicircular, glanduliferous dorsally, short; leaves slender-petiolate, the blades elliptic or broadly elliptic, about 16 cm. long and 8.5 cm. wide, abruptly acuminate, obtuse or acutish at the base, excavate beneath in the axils of the nerves; panicles short-pedunculate, 6 cm. long, laxly many-flowered, the flowers sessile; calyx 5-dentate, the teeth acute; corolla white, purplish outside, 6-8 mm. long, with short lobes, the throat villous; stamens exerted; fruit small, globose, red. Neg. 661.

Huánuco: Described from Mesapata and Pueblo Nuevo, *Ruiz & Pavón* (photo. seen of authentic specimen, ex hb. Berol.).

Rudgea hispidula Standl. Field Mus. Bot. 8: 226. 1930.

A slender shrub 1.5 meters high or less, the branchlets densely hispidulous; stipules persistent, 1-4 mm. long, rounded and mucronate, bearing at first a dorsal cluster of pale setae; leaves subsessile, firm-membranaceous, the blades lance-oblong to elliptic, 6-11 cm. long, 2-5.5 cm. wide, obtusely acuminate, often emarginate or subcordate at the base, glabrous; inflorescences small, pedunculate, corymbiform, few-flowered, the branches sparsely pilose, the flowers sessile; calyx subtruncate; corolla white, sparsely and minutely puberulent, rounded at the apex in bud; fruit subglobose, about 5 mm. in diameter, white.

Loreto: Santa Rosa, lower Río Huallaga, 135 meters, in forest, *Killip & Smith 28931*, type; in or at edge of forest, *Williams 4753, 4863, 4870*. Yurimaguas, 135 meters, in forest, *Killip & Smith 27644, 27632; Williams 4663*. Puerto Arturo, *Williams 5050*.

Rudgea insolita Standl. Field Mus. Bot. 7: 153. 1930.

Branchlets densely pilosulous; stipules ovate-triangular, aculeolate-ciliate at the apex; leaves petiolate, the blades subcoriaceous, oval or broadly elliptic, 11-16 cm. long, 6-9 cm. wide, acute, rounded at the base, pilosulous on both sides along the costa; inflorescence

pedunculate, cymose-corymbose, densely many-flowered, trichotomous, the branches densely pilosulous, the flowers congested and sessile; calyx lobes oblong, recurved, 3–5 mm. long, obtuse; corolla densely hispidulous, the slender tube 23 mm. long or more, the oblong lobes 7–9 mm. long, obtuse, cucullate at the apex.

Huánuco: Cochoero, in forest, *Poeppig 1091*.—Without locality: Peruvia subandina, *Poeppig* (hb. Berol.). Also in the mountains of Colombia.

Rudgea justicioides Standl. Field Mus. Bot. 8: 229. 1930.

A slender glabrous shrub 1.5–2 meters high; stipules 3.5–5 mm. long, bifid, subulate-ciliate on the basal part, persistent; leaves sessile or subsessile, firm-membranaceous, elliptic or oblong-elliptic to lance-oblong, 6.5–12.5 cm. long, 2.5–5.5 cm. wide, abruptly acuminate or acute, acute at the base or narrowed and obtuse; inflorescences terminal, capitate, short-pedunculate or subsessile, densely few-flowered, subtended by several broad, purple bracts 1.5–2 cm. long; calyx tubular, denticulate; corolla white; fruit deep blue, oval, 7–9 mm. long.

Loreto: Río Masana, *Williams 163*, type. San Antonio, *Williams 3433*; *Killip & Smith 29354, 29331*. Also in Amazonian Brazil.

Rudgea Klugii Standl., sp. nov.

Arbor 5-metralis omnino glabra, ramulis crassiusculis subteretibus, vetustioribus ochraceis, internodiis brevibus; stipulae deciduae, supremae 3 mm. longae rotundato-ovatae obtusae apice sparse breviter aculeolato-ciliatae; folia mediocria breviter petiolata subcoriacea in sicco fusca, petiolo crassiusculo 1–1.5 cm. longo; lamina elliptico-oblonga 8–15 cm. longa 4–6.5 cm. lata abrupte acuminata vel apice subrotundata et abrupte in acumen angustum contracta, basi acuta, supra lucida nervis vix elevatis, subtus sublucida brunnescens, costa crassiuscula elevata, nervis lateralibus utroque latere circa 9 prominulis obliquis remote a margine arcuato-conjunctis, venulis inconspicuis; inflorescentia terminalis capitato-umbelliformis 3–5-flora breviter pedunculata vel fere sessilis, pedicellis crassis vix ultra 2 mm. longis; calyx circa 2 mm. longus profunde lobatus, laciniis ovatis acutis vel acuminatis; corolla alba extus glabra, tubo gracillimo 6 cm. longo vel paullo ultra 1.5 mm. crasso, lobis 5 oblongo-linearibus 1.5 cm. longis; antherae longe exsertae.

San Martín: Pongo de Cainarachi, Río Cainarachi, a tributary of the Río Huallaga, 230 meters, in forest, *Klug 2664* (herb. Field Mus. No. 675,993, type).

Noteworthy for its very large corollas and its few-flowered inflorescences.

Rudgea loretensis Standl. Field Mus. Bot. 8: 230. 1930.

A glabrous shrub 1-3 meters high (reported in Brazil as 6 meters high) with rather stout branches; stipules persistent, broadly ovate or rounded, 6-10 mm. long, obtuse, dorsally aculeolate-ciliate; leaves short-petiolate, thick-membranaceous, the blades broadly elliptic to lance-oblong, 11-20 cm. long, 4-11.5 cm. wide, long-acuminate, acute at the base, excavate beneath in the axils of the nerves; inflorescence cymose-paniculate, laxly few-flowered, 3-4.5 cm. long and broad, trichotomous at the base, the flowers sessile; corolla white, minutely pulverulent or glabrate, the tube 12 mm. long, the oblong, recurved lobes 7 mm. long.

Loreto: Caballo-cocha on the Amazon, in forest, *Williams* 2484 (type), 2233, 2505. La Victoria, in forest, *Williams* 2877, 2618, 2841. Balsapuerto, 150-350 meters, dense forest, *Killip & Smith* 28567; *Klug* 3057. Iquitos, 100 meters, *Killip & Smith* 27450. Fortaleza, Yurimaguas, edge of forest, *Williams* 4395. Also in Amazonian Brazil.

Rudgea Mexiae Standl., sp. nov.

Arbuscula 5-metralis, ramulis crassis primum pilosis cito glabratis, internodiis brevibus; stipulae magnae 2 cm. longae et ultra dense pilosae fere ad basin in lacinias numerosas filiformes graciles fissae; folia magna papyracea breviter petiolata, petiolo crasso 3-4.5 cm. longo dense piloso; lamina elliptico-oblonga vel obovato-oblonga 25-32 cm. longa 9-12 cm. lata abrupte breviter acuminata, basi acuta vel acuminata, supra in sicco fusca glabra, nervis non elevatis, subtus multo pallidior ubique subdense breviter pilosa, ad costam densius longiusque pilosa, costa crassa elevata, nervis lateralibus utroque latere circa 14, aliis fere aequivalidis interjectis, angulo lato adscendentibus valde arcuatis prominentibus marginem attingentibus, venulis inconspicuis paucis; inflorescentia terminalis 12 cm. longe pedunculata capitato-corymbosa 5.5 cm. longa, bracteis magnis lanceolatis basi latis, ramis crassis sparse pilosis, floribus numerosissimis dense capitatis sessilibus, capitulis paucis vulgo ternatis crasse pedunculatis 1-1.5 cm. diam. bracteis erectis lanceolatis vel ovatis striatis attenuatis vel acuminatis pilosis fulcratis; corolla 12 mm. longa extus dense pilosa alba, lobis suberectis brevibus acutis.

Loreto: Above Pongo de Manseriche, at right of the mouth of Río Santiago, 210 meters, in dense forest, infrequent, *Ynes Mexia 6366* (herb. Field Mus. No. 718,409, type).

Rudgea microcarpa (R. & P.) Standl. Field Mus. Bot. 8: 382. 1931. *Coffea microcarpa* R. & P. Fl. 2: 66. pl. 218, f. b. 1799.

A glabrous shrub or small tree 5 meters high; stipules connate, truncate and bidentate, with subulate teeth; leaves short-petiolate, the blades large, lance-oblong to elliptic-lanceolate, long-acuminate, acute or attenuate at the base; inflorescence pedunculate, paniculate, corymbiform, laxly many-flowered, the flowers sessile, ternate, the branches minutely pubescent; calyx minute, 5-dentate; corolla whitish, finely pubescent; anthers scarcely exerted; fruit reddish, globose, the size of a peppercorn. Neg. 679.

Huánuco: Type from forests of Pillao near Patasaria, *Ruiz & Pavón* (photo. and fragm. seen of authentic specimens, ex hb. Berol.).

In Field Mus. Bot. 8: 382 the writer referred to this species several collections from Peru, but closer study of the type material shows that this disposition was incorrect. No recent specimens have been seen that agree exactly with the type of *R. microcarpa*.

Rudgea nitida (R. & P.) Spreng. Syst. Veg. 1: 755. 1825. *Coffea nitida* R. & P. Fl. 2: 65. pl. 217, f. a. 1799.

A glabrous shrub or small tree; stipules semicircular, bearing dorsally a cluster of pale, subulate setae; leaves short-petiolate, subcoriaceous, oblong or elliptic-oblong, 8–12 cm. long, 2.5–5 cm. wide, obtuse or rounded and shortly produced, acute or obtuse at the base, shining above, paler beneath; inflorescence small, dense, paniculate, pedunculate, few- or many-flowered, the flowers chiefly sessile; calyx minute, 5-dentate; corolla white, 6–9 mm. long, pilose in the throat; fruit globose, red, 6–7 mm. broad. Neg. 681.

Huánuco: Described from Muña and Chicoplaya, *Ruiz & Pavón* (photo. and fragm. of authentic specimen seen, ex hb. Berol.). Chanchamayo Valley, 1,200 meters, *Schunke 291*. Above San Ramón, 1,300–1,700 meters, *Schunke A25*.

Rudgea obesiflora Standl. Field Mus. Bot. 11: 265. 1936.

A small tree 5 meters high, the trunk 6.5 cm. in diameter, glabrous throughout; stipules pale, 12–15 mm. long, broadly oblong or oblong-cuneate, shortly many-lacinate at the apex; leaves short-petiolate, elliptic-oblong or lance-oblong, 9–12 cm. long, 3–5 cm. wide, narrowly long-acuminate, acute or acuminate at the base, with about

8 pairs of lateral nerves; inflorescence terminal, long-pedunculate, trichotomous, the branches 1 cm. long, 3-flowered at the apex, the flowers sessile; calyx subrotate, 4 mm. long, 7–8 mm. wide, truncate; corolla white, in bud obtuse and 5-corniculate at the apex, the tube 10–12 mm. long and 8 mm. thick at the apex, the lobes broadly triangular, obtuse, 5–6 mm. long.

Loreto: Upper Marañón, mouth of Río Santiago, upland forest, 160 meters, *Tessmann 4070*, type.

Easy of recognition because of the curious broad corollas.

Rudgea Poeppigii Schum. in herb., sp. nov.

Frutex vel arbuscula glabra usque ad 4.5 m. alta, ramulis gracilibus vel crassiusculis; stipulae parvae latae persistentes aculeolato-ciliatae; folia sessilia vel brevissime petiolata membranacea vel papyracea oblongo-elliptica vel oblonga 8–14 cm. longa 2–6.5 cm. lata acuminata, basi acuta et saepe obliqua vel sensim versus basin anguste obtusam vel rotundatam angustata; inflorescentia vulgo parva et pauciflora corymbiformis, floribus plerumque ternatis sessilibus vel pedicellatis; calyx parvus truncatus et denticulatus; corolla alba in alabastro linearis obtusa 9–11 mm. longa, lobis brevibus; fructus albus ovoideus vel ellipsoideus 8–10 mm. longus. Neg. 686.

Loreto: Yurimaguas, *Poeppig 2467* (herb. Field Mus. No. 767,812, type); *Williams 4534*; *Killip & Smith 27989*. Recreo, in forest, *Williams 4162*. Between Yurimaguas and Balsapuerto, 140 meters, *Killip & Smith 28078*. Puerto Arturo, 135 meters, *Killip & Smith 27742*. Soledad, *Killip & Smith 29695*. Puerto Meléndez, *Tessmann 4578*. Soledad, *Tessmann 5311*.—San Martín: Tarapoto, *Spruce 3997*.—Without locality: *Poeppig 2153*.

Rudgea psychotriaefolia Standl. Field Mus. Bot. 8: 228. 1930.

A glabrous shrub 3 meters high with stout branches; stipules persistent, rigid, broadly ovate, 8–11 mm. long, deeply pectinate-laciniate; leaves short-petiolate, firm-membranaceous, the blades obovate or oblong-obovate, 9–20 cm. long, 4–8 cm. wide, abruptly acuminate, cuneately narrowed to the base, sometimes pulverulent beneath on the veins; inflorescence short-pedunculate, cymose-paniculate, 2–3 cm. long and broad, the flowers sessile or subsessile, congested; calyx remotely denticulate; corolla ochroleucous, sparsely and minutely puberulent, the tube 8 mm. long, the lobes half as long.

Loreto: Yurimaguas, 135 meters, in dense forest, *Killip & Smith 29016*, type. Between Yurimaguas and Balsapuerto, 140 meters, dense forest, *Killip & Smith 28270*.

Rudgea racemosa (R. & P.) Spreng. Syst. Veg. 1: 755. 1825. *Coffea racemosa* R. & P. Fl. 2: 64. pl. 214, f. a. 1799.

A glabrous shrub or tree 5 meters high; stipules bifid, caducous, their axils furnished with thick, gland-like setae; leaves petiolate, the blades broadly elliptic, as much as 16 cm. long and 9 cm. wide, abruptly acute or short-acuminate, acute or obtuse at the base; panicles pedunculate, many-flowered, racemosely branched, the flowers subsessile; calyx 5-dentate; corolla white; stamens exserted; fruit oval, red, about 1 cm. long. Neg. 839.

Huánuco: Described from Pati and Macora, *Ruiz & Pavón* (photo. seen, ex hb. Berol.).

The specimen of which I have seen a photograph is in fruit only, and it is not possible to determine satisfactorily the generic position of the plant. It is doubtful whether it really is a species of *Rudgea*. In the Berlin herbarium it appears to have been referred to *Faramea*, but the form of the fruit excludes it from that genus.

Rudgea retifolia Standl. Field Mus. Bot. 8: 227. 1930. *R. cephalantha* Standl. op. cit. 230.

A glabrous shrub or small tree 1–4.5 meters high with stiff branches; stipules persistent, quadrate or rounded, 2–4 mm. long, aculeolate-ciliolate; leaves sessile or nearly so, the blades more or less coriaceous, oblong-lanceolate to ovate-oblong, 6–19 cm. long, 2–6.5 cm. wide, long-acuminate, acute to acuminate at the base; flowers in small, dense, stiff-pedunculate heads about 1 cm. in diameter, the peduncles 1–3 cm. long; calyx subtruncate or remotely dentate; corolla white, glabrous or puberulent at the apex, the tube 3 mm. long, barbate in the throat; fruit globose or didymous-globose, about 5 mm. long and 6 mm. broad, white.

Loreto: Timbuchi, Río Nanay, in forest, *Williams 994*, type. Caballo-cocha, in forest, *Williams 2228*, type of *R. cephalantha*. Río Nanay, in forest, *Williams 756, 766, 729*. Yurimaguas, 135 meters, dense forest, *Killip & Smith 28023*. Peña Blanca, 110 meters, *Killip & Smith 29646*. Iquitos, *Killip & Smith 27195*. Also in Colombia.

"Amanga," "sanango de bajo," "pichico runto." The type of *R. retifolia* is a fruiting specimen and that of *R. cephalantha* one in

flower. Although when the two species were published, I thought them distinct, I can see now no means of separating them.

Rudgea sessiliflora Standl. Field Mus. Bot. 8: 228. 1930.

A glabrous shrub 2 meters high or less with slender branches; stipules deciduous, 1–2.5 mm. long, bearing at the apex a few pale, subulate setae; leaves short-petiolate, membranaceous, the blades oblong-lanceolate or narrowly elliptic-lanceolate, 4.5–8.5 cm. long, 1.5–3 cm. wide, narrowly long-acuminate, narrowed to the base; flower heads terminal, sessile, dense, few-flowered; calyx cupular, obscurely denticulate; fruit white, subglobose, 1 cm. long.

Loreto: Soledad, Río Itaya, dense forest, *Killip & Smith 29698* (type), *29575*; *Tessmann 5303*. Fundo Indiana, 110 meters, *Mexia 6391*. San Antonio, Río Itaya, dense forest, *Killip & Smith 29524*. —Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith 26666*.

Rudgea sororia Standl. Field Mus. Bot. 11: 267. 1936.

A glabrous shrub 2 meters high with rather stout branches; stipules persistent, 1–1.5 cm. long, striate, laciniate; leaves almost sessile, oblong or elliptic-oblong, 12–15 cm. long, long-acuminate, acute or obtuse at the base; inflorescence corymbose, short-pedunculate, few-flowered, short-pedicellate; calyx green or purplish, corollid, 1.5–2 cm. long, deeply lobate, persistent; corolla white; fruit globose, finely tuberculate.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 1310*, type.

Rudgea Sprucei Standl. Field Mus. Bot. 4: 333. 1929.

A glabrous shrub or tree 3–9 meters high with stout branches; stipules 5–6 mm. long, broadly ovate, obtuse, aculeolate-ciliate; leaves large, short-petiolate, subcoriaceous, the blades broadly oblong to obovate or broadly elliptic, short-acuminate or rounded at the apex and cuspidate, acute at the base; inflorescence short- or long-pedunculate, cymose-capitate or umbelliform, small, dense, few- or many-flowered, in fruit becoming more open, the flowers sessile and congested; calyx minute, 5-dentate; corolla white, coriaceous, 17 mm. long, the lobes and tube subequal; anthers exserted; fruit ovoid-globose, red, at maturity as much as 3.5 cm. long.

Loreto: Fortaleza, Yurimaguas, edge of forest, *Williams 4394*. Pumayacu, 600–1,200 meters, in forest, *Klug 3220*. Yurimaguas, in forest, *Williams 4096*; *Killip & Smith 27564*, *29084*, *29089*;

Spruce 3893.—San Martín: Forests of Mount Huairapurina, *Spruce 3995*, type. Tarapoto, *Spruce 4056*.

Rudgea stenophylla (Krause) Standl. Field Mus. Bot. 11: 268. 1936. *Palicourea stenophylla* Krause, Bot. Jahrb. 40: 338. 1908.

A shrub or small tree 5 meters high, the branches sparsely puberulent or glabrate; stipules triangular, acute, 4–5 mm. long, laciniate; leaves short-petiolate, firm, the blades narrowly oblong or oblong-lanceolate, 10–14 cm. long, 3–4 cm. wide, acuminate, sparsely pubescent beneath on the veins; inflorescence paniculate, as much as 8 cm. long, open and rather few-flowered, the flowers sessile; calyx obsoletely 5-dentate; corolla yellowish, pilose, 10 mm. long. Neg. 637.

San Martín: Dry forest near Moyobamba, 1,500 meters, *Weberbauer 4548*, type; photo. and fragm. seen, ex hb. Berol.

Rudgea tambillensis Zahlbr. Ann. Naturh. Hofmus. Wien 7: 2. 1892.

Glabrous, with slender branches; stipules semicircular, dorsally aculeolate-ciliate; leaves petiolate, ovate-oblong or oblong-lanceolate, 6–18 cm. long, 3–7.5 cm. wide, acuminate, acute or obtuse at the base, thin; panicles corymbiform, pedunculate, open, many-flowered, the flowers sessile or nearly so; calyx acutely dentate; corolla glabrous, the tube 5–7 mm. long, the lanceolate lobes of equal length; stamens scarcely exerted; fruit oval, 1 cm. long. Neg. 692.

Cajamarca: Tambillo, *Jelski 74*, type (photo. seen, ex hb. Berol.); *Raimondi 4146*.

Rudgea verticillata (R. & P.) Spreng. Syst. Veg. 1: 755. 1825. *Coffea verticillata* R. & P. Fl. 2: 66. pl. 217, f. b. 1799.

A glabrous shrub 3.5 meters high; stipules ovate, ciliate, deciduous; leaves on rather slender petioles, the blades subcoriaceous, oblong or obovate-oblong, up to 15 cm. long, rounded at the apex and with a short, triangular acumination, narrowed to the base; panicles pedunculate, many-flowered, lax, the flowers sessile; calyx 5-dentate; corolla white, 11–12 mm. long, the throat villous; stamens exerted. Neg. 696.

Huánuco: Type collected at Playa between Mufia and Posuso, *Ruiz & Pavón*. Playa Grande and Chicoplaya, *Ruiz* (photo. of specimen in hb. Berol.). Without locality, *Ruiz & Pavón* (hb. Kew.).

Rudgea Woronowii Standl. Field Mus. Bot. 7: 155. 1930.

A glabrous shrub with stout branches; stipules persistent, 3-4 cm. long, deeply multilacinate; leaves short-petiolate, the blades oblong-obovate, 20-30 cm. long and 10-12 cm. wide, abruptly short-acuminate or apiculate, narrowed to the acute base, with 20 or more pairs of nerves; inflorescence thyrsoid-paniculate, long-pedunculate, 7-14 cm. long, many-flowered, the pedicels 1-2 mm. long; fruit subglobose, 3-3.5 mm. long.

Loreto: Alto Río Nanay, in forest, *Williams 1081, 1077*. Also in Colombia and Venezuela.

72. PSYCHOTRIA L.

Shrubs or small trees, rarely small and only suffrutescent plants; stipules persistent, and then commonly bilobate, or caducous, and then usually entire; leaves opposite; inflorescence chiefly terminal, but in a few species axillary, variable in form, but rather rarely head-like and then seldom conspicuously involucrate, never with a showy involucre of partially united bracts, the flowers generally small, inconspicuous, and white or yellowish; calyx lobes short or elongate, often obsolete, more or less united; corolla short or elongate, with straight tube, often barbate in the throat, the lobes valvate; stamens inserted in the corolla tube, included or exerted; ovary mostly 2-celled but rarely 5-celled (subgenus *Nonatelia*); fruit baccate, containing 2 or 5 nutlets.

The genus is the largest and most complicated group of American Rubiaceae, but the species, although so numerous and often much alike in general appearance, are separated by constant and practical characters, except in a few groups in which probably too many species have been described. The species certainly are much easier of recognition than those of the genus *Palicourea*. The key given below, except for the two primary divisions, is not at all a natural one, but in view of the fact that so many of the species are known only in flower or else only in fruit, it has seemed preferable to attempt to key the species by recognizable even if not systematically important characters.

Psychotria is only vaguely separable from *Palicourea* and *Cephaelis* (and not too distinct from *Rudgea*). It is doubtless more logical to refer *Cephaelis*, *Palicourea*, and *Psychotria* all to *Psychotria*, as was done by Mueller in the *Flora Brasiliensis*, but all three groups are large ones, and it is decidedly convenient to maintain all of them. Although a small proportion of the plants concerned are of

uncertain generic position, ninety per cent of them can be referred at a glance definitely to a genus, at least by one who has some general knowledge of the group.

Mueller, however, maintained as distinct the genus *Mapouria*, here merged in *Psychotria*. The two genera are separable only on fruit characters, and the fruit of many species still is unknown. Even if it were known for all, I do not believe that *Mapouria* is an important group or worthy of generic rank. Although one group—the species with deciduous stipules—can be recognized by gross aspect, many others—those with persistent stipules—evidently are closely related to typical *Psychotrias*.

The section or subgenus *Nonatelia*, containing species with 5-celled fruit, does seem to be worthy of generic rank, but it contains only half a dozen species, and would therefore have no practical value in facilitating determination, especially since it is not easy in flowering specimens to determine the number of cells. A larger number of *Palicoureas* also have 5-celled fruit, and would be equally worthy of generic rank, but they are quite different in general appearance from the *Psychotrias* having similar fruit.

Bremekamp, in his excellent account of the Rubiaceae in Pulle's *Flora of Surinam* (1934) has proposed still further segregates from *Psychotria*, recognizing, besides *Cephaelis* and *Mapouria*, *Notopleura*, *Ronabea*, *Gamotopea*, *Petagomoa*, and *Nonatelia*, all of which are represented in Peru. While such a division of the genus may be found altogether satisfactory within a limited area, it can scarcely accommodate all the South American species of *Psychotria*, at least with the material now available for their study. Such a division, if applied uniformly to the whole genus, would involve the segregation of still further genera, a treatment that ultimately may be found most consistent.

Stipules caducous, entire or nearly so, brown or ferruginous. Plants usually blackening when dried. Subgenus *Mapouria* in part.

Young branches conspicuously pilose, villous, or hirsute.

Leaves sessile, cordate at the base. *P. Marcgraviella*.

Leaves petiolate, acute at the base.

Flowers slender-pedicellate; leaves almost glabrous.

P. tenuicaulis.

Flowers sessile or nearly so; leaves densely hirsute or pilose.

Flowers in small, long-stalked heads; leaves hirsute on the upper surface. *P. villosa*.

Flowers not in long-stalked heads, usually ternately clustered, the clusters sessile or short-stalked; leaves glabrous on the upper surface. *P. zepelaciana*.

Young branches glabrous or merely puberulent.

Flowers glomerate, the glomerules spicate, the spikes paniculate.

Leaves narrow, long-attenuate to the base. *P. viridis*.

Flowers glomerulate or scattered, the glomerules not spicate.

Flowers all or chiefly on short or elongate pedicels.

Panicles large, mostly 10–15 cm. long and fully as broad, lax, open, the lower branches elongate, divaricate or reflexed.

Stipules 2–2.5 cm. long. *P. educta*.

Stipules much shorter.

Branches of the inflorescence densely pubescent.

P. acreana.

Branches of the inflorescence glabrous or nearly so.

Leaf blades broadly ovate or elliptic, 7–16 cm. wide, abruptly contracted at the base. *P. Weberbaueri*.

Leaf blades narrowly lance-oblong or oblanceolate-oblong, mostly 5 cm. wide or less, long-attenuate to the base.

Stipules calyptriform, 2–3 cm. long. *P. abdita*.

Stipules oblong, acute, 6 mm. long. *P. pichisensis*.

Panicles small, usually much less than 10 cm. long, open or dense, the lower branches not markedly elongate, often shorter than the upper ones, mostly ascending.

Calyx large, about 2.5 mm. wide; branches of the inflorescence pruinose-puberulent. Leaf blades obovate.

P. cupularis.

Calyx small, not more than 1.5 mm. wide; branches of the inflorescence usually quite glabrous.

Corolla 4 mm. long; pedicels usually short, or elongating only in fruit. *P. alba*.

Corolla 2–3 mm. long; pedicels usually elongate in flower.

Panicles trichotomous, with elongate, capillary branches; leaves with a very long, almost linear acumination. *P. juninensis*.

Panicles usually verticillately branched, with relatively stout branches; leaves acute or short-acuminate..... *P. marginata*.

Flower all sessile or practically so.

Panicles pyramidal, the lower branches elongate, spike-like, reflexed..... *P. alboviridula*.

Panicles not pyramidal, the lower branches not greatly elongate, not normally reflexed.

Leaves short-pilose or puberulent beneath, at least along the costa. Leaves small and oblong or oblanceolate-oblong; stipules obtuse..... *P. carthaginensis*.

Leaves glabrous beneath or merely pulverulent.

Inflorescence corymbose, more or less flat-topped. Leaves oblong or oblong-oblanceolate. *P. anceps*.

Inflorescence paniculate, not flat-topped.

Leaves conspicuously excavate beneath in the axils of the nerves, with large and conspicuous shelters for parasites..... *P. hospitalis*.

Leaves not excavate beneath.

Stipules acute..... *P. striolata*.

Stipules rounded at the apex.

Leaf blades elliptic or broadly elliptic.

P. Ernesti.

Leaf blades obovate or oblong-obovate.

P. Mathewsii.

Stipules persistent, usually green or greenish, various in form, often deeply bilobate or connate into a truncate sheath which is produced into short or elongate lobes.

Inflorescences all axillary. Plants low, often chiefly herbaceous or merely suffrutescent.

Leaves rounded or very obtuse at the apex, bullate. Flowers in small, slender-pedunculate heads..... *P. bullatifolia*.

Leaves acuminate, not bullate.

Inflorescence sessile, head-like..... *P. emetica*.

Inflorescence pedunculate, cymose or paniculate.

P. macrophylla.

Inflorescences all or chiefly terminal.

- A. Inflorescence usually open and lax, never with large or colored or green, conspicuous bracts, never consisting of few or numerous large or small heads subtended by elongate or broad bracts.

Branches densely pilose with short or long hairs; leaves densely pubescent beneath, usually pilose or hirsute.

Stipules 5-6 mm. long, acute; inflorescence umbelliform.

P. candelabrum.

Stipules more than 1 cm. long, subulate or acuminate; inflorescence not umbelliform.

Leaves conspicuously bullate, with impressed veins.

P. Aschersoniana.

Leaves not bullate.

Branches hirsute with long, straight, spreading hairs; flower clusters rather conspicuously bracted.

P. pilosa.

Branches tomentose or short-pilose; flower clusters with inconspicuous bracts.

Branches finely and densely tomentose; leaves obtuse at the base; inflorescence pyramidal-paniculate..... *P. reticulata.*

Branches short-villous or short-pilose; leaves acute at the base; inflorescence usually trichotomous.

P. subtomentosa.

Branches glabrous or puberulent or inconspicuously and very sparsely pubescent; leaves commonly glabrous or nearly so, at most inconspicuously pubescent.

Flowers in simple, usually sessile but sometimes pedunculate heads.. *P. nudiceps.*

Flowers not in simple heads.

Stipules annular and truncate or with short, obtuse lobes.

Plants epiphytic; leaves thick-coriaceous, somewhat fleshy when fresh, small; stipules annular and usually truncate. Plants wholly glabrous.

Leaf blades mostly 3-3.5 cm. wide, often rounded or subtruncate at the base, with 6-8 pairs of conspicuous lateral nerves..... *P. epiphytica.*

Leaf blades 1–2.5 cm. wide, acute or obtuse at the base, with about 4 pairs of obscure nerves.

P. semimetralis.

Plants terrestrial; leaves not fleshy; stipules bilobate.

Lower branches of the panicle without bracts at their base.

Inflorescence ovoid-paniculate, open, the basal branches spreading. *P. compta.*

Inflorescence cyme-like, dense, compact, the basal branches strongly ascending. *P. rhodothamna.*

Lower branches of the panicle bracted at the base.

Branches of the inflorescence refracted.

Leaf blades oblong or lance-oblong, mostly 3–5 cm. wide; panicles small, and thyriform.

P. falcata.

Leaf blades broadly elliptic to obovate or elliptic-ovate, mostly 7–16 cm. wide; panicles large and pyramidal.

Calyx minute, less than 1 mm. long.

P. yapasensis.

Calyx 2.5 mm. long. *P. latifolia.*

Branches of the inflorescence not refracted, spreading or ascending.

Leaf blades large, mostly 7–16 cm. wide; calyx 2–3 mm. long. *P. tinctoria.*

Leaf blades small, less than 4 cm. wide; calyx 1 mm. long or less.

Young branchlets densely pubescent.

P. retifera.

Young branchlets glabrous.

Leaves oblong or elliptic-oblong, 2–3.5 cm. wide. *P. virgata.*

Leaves broadly elliptic, 3.5–5 cm. wide.

P. costato-venosa.

Stipules with acute to subulate or linear lobes.

Inflorescence spike-like, elongate, the flowers or flower clusters sessile or nearly so. *P. stenostachya.*

Inflorescence not spike-like.

Inflorescence a narrow, racemiform or thyrsiform panicle, normally twice as long as broad or longer, usually of almost equal width throughout. Branches of the panicle often refracted.

Leaf blades rounded at the base, oblong, large, about 25 cm. long. Branches of the panicle densely pubescent. *P. limitanea*.

Leaf blades acute or acutish at the base, usually much shorter.

Inflorescence raceme-like, consisting of few simple, small heads subtended by small but evident, greenish bracts.

P. racemifera.

Inflorescence not raceme-like or, if so, the flowers disposed in cymules.

Foliage discoloring in drying, becoming blackish or dark reddish. *P. Tessmannii*.

Foliage normally bright green or yellowish green when dried.

Panicles copiously hirtellous or short-pilose. *P. huantensis*.

Panicles glabrous or obscurely and minutely puberulent.

Leaves coriaceous, with conspicuous, pale, cartilaginous borders, 3-8 cm. wide, often much elongate.

P. loretensis.

Leaves firm-membranaceous, without conspicuous borders, mostly 2.5-4 cm. wide. *P. patens*.

Inflorescence various, but not a narrow, elongate, open panicle.

Fruit 5-celled. Panicles small and shorter than the leaves; leaves green when dried. . . . *P. racemosa*.

Fruit 2-celled.

Inflorescence openly paniculate, the flowers mostly in cymules, never in distinct heads.

Bracts none at the base of the lower panicle branches; leaves with very long and narrow acuminations. *P. cuspidata*.

Bracts present at the base of all the panicle branches; leaves never with very long and narrow acuminations.

Leaves almost sessile, the petioles only 1–2 mm. long.....*P. huallagae*.

Leaves on elongate petioles.

Calyx obsolete and scarcely perceptible in fruit; panicles glabrous or practically so, small and rounded.

P. microbotrys.

Calyx almost 1 mm. long, conspicuous upon the fruit; panicles copiously pubescent or puberulent, large, lax, often pyramidal.

Bracts of the panicle linear, green, conspicuous.....*P. luxurians*.

Bracts of the panicle minute and inconspicuous.....*P. opima*.

Inflorescence condensed or head-like or, if paniculate, the flowers collected in small, dense heads.

Inflorescence fastigiately branched, very dense and compact, many-flowered.

Leaves blackening when dried; inflorescence densely pubescent...*P. nigricans*.

Leaves green or yellowish green when dried; inflorescence glabrous or practically so.

P. cuspidulata.

Inflorescence not fastigiately branched, composed of few or numerous heads or of a small, head-like cyme.

Leaves densely pilose beneath along the costa.....*P. trifida*.

Leaves glabrous beneath.

Flower heads arranged in a simple umbel; leaves all or chiefly broadest above the middle.....*P. Albert-Smithii*.

Flower heads arranged in compound umbels or in small panicles.

P. pluriceps.

- .. Inflorescence composed of one or numerous dense heads subtended by conspicuous and relatively large bracts, the heads large or small; or the inflorescence sometimes rather open, but then furnished with large or at least conspicuous, red, purple, white, or pale green bracts.
- Lobes of the stipules broad and usually short, rounded to acutish at the apex.
- Flower heads arranged in a simple umbel *P. Klugii*.
- Flower heads arranged in racemes.
- Leaves glabrous beneath *P. egensis*.
- Leaves pilose beneath, at least on the costa.
- Flower heads 1.5–2 cm. broad *P. Victoriae*.
- Flower heads commonly 1 cm. or less in diameter, excluding the corollas.
- Stipules 1–2.5 cm. long *P. pongoana*
- Stipules less than 1 cm. long.
- Panicle several times branched, diffuse, the branches densely pilose; bracts of the flower heads only 2–3 mm. long, spreading.
- P. nautensis*.
- Panicle only once or twice branched, usually narrow, the branches only sparsely pilose or glabrate; bracts of the flower heads mostly 4–6 mm. long, erect *P. brachiata*.
- Lobes of the stipules narrow and acute or acuminate, usually linear or subulate.
- Primary (lowest) branches of the inflorescence without bracts at their base, the bracts, if any, inserted some distance above the base of the branch.
- Leaves, at least the uppermost, sessile or essentially so, obtuse or rounded at the base *P. Williamsii*.
- Leaves conspicuously petiolate or, if subsessile, acute or acuminate at the base.
- Inflorescence normally longer than broad, at least with an evident elongate rachis, the flower clusters pinnately disposed.
- Leaf blades abruptly contracted and decurrent at the base *P. involucrata*.

Leaf blades merely acute or obtuse at the base.

P. moyobambana.

Inflorescence commonly broader than long, with no elongate rachis, the flower clusters flabellately or umbellately disposed.

Corolla densely pilose with rather long, spreading hairs. Leaves sessile or practically so.

P. tarapotensis.

Corolla glabrous, or pilose only at the apex of the lobes.

Inflorescence when dried green, without any tinge of red, about 1 cm. wide; leaves pale beneath, and with whitish veins. *P. Herzogii.*

Inflorescence when dried more or less reddish, at least about the base of the bracts, often deep red or purple, commonly 1.5-5 cm. wide; leaves more or less tinged with red beneath, at least on the veins.

Larger bracts of the inflorescence commonly 2-2.5 cm. long, usually deep red or purple.

P. rhodophylla.

Larger bracts mostly less than 1.5 cm. long.

Bracts obovate, rounded or very obtuse at the apex; peduncles commonly shorter than the inflorescence. *P. Buchtienii.*

Bracts lanceolate to ovate, acute or acuminate; peduncles nearly always longer than the inflorescence. *P. lupulina.*

Primary branches of the inflorescence with bracts inserted at their base.

Branches pilose or hirsute with long, spreading hairs.

P. pilosa.

Branches glabrous or nearly so.

Bracts rounded-ovate or rounded-obovate, rounded at the apex. Inflorescence a small, dense, unbranched head. *P. Ruizii.*

Bracts linear to lance-ovate, acute or acuminate.

Inflorescence evidently branched or lobate, the branches suberect or strongly ascending.

Bracts green when dried, mostly linear, small.

P. capitata.

Bracts red or purplish, lanceolate or ovate-lanceolate, large. *P. calochlamys*.

Inflorescence capitate or, if branched, with widely divaricate or reflexed branches.

Leaves finely pubescent beneath. . . *P. japurensis*.

Leaves glabrous or nearly so.

Lowest bracts short and inconspicuous, shorter than the flowers or lower branches. Inflorescence pinnately branched, with an evident elongate main axis. . . . *P. iquitosensis*.

Lowest bracts linear, much elongate, exceeding the flowers and the lowest branches (if any) of the inflorescence.

Heads small and few-flowered, the bracts 1 cm. long or less; leaves small, 2-3.5 cm. wide.

P. Hoffmanseggiana.

Heads larger, many-flowered, the outer bracts mostly 2 cm. long or more; leaves mostly 3.5-6 cm. wide or larger.

P. santaremica.

Psychotria abdita Standl. Field Mus. Bot. 4: 340. 1929.

A tree 6 meters high with glabrous branchlets; stipules connate, ferruginous, glabrous, forming a cap over the buds; leaves petiolate, thick-membranaceous, elliptic-oblong to oblanceolate-oblong, 13-24 cm. long, 2.5-9 cm. wide, long-acuminate, attenuate to the base, glabrous, with 12-16 pairs of nerves; inflorescence sessile, paniculate, 5 cm. long and 6-8 cm. wide, the branches divaricate or ascending, very minutely puberulent; pedicels 2 mm. long or less; calyx truncate; corolla white, glabrous, in bud 1.5 mm. long.

San Martín: Forests at the foot of Cerro Campana near Tarapoto, Spruce 4351, type.—Loreto: Pumayacu, 600-1,200 meters, in forest, Klug 3226; a shrub of 2.5 meters with white and yellow flowers.

The inflorescence when young is enveloped in a large, brown, cap-like bract having a long, slender beak.

Psychotria acreana Krause, Notizbl. Bot. Gart. Berlin 6: 207. 1914.

A shrub or tree 3–12 meters high, the branchlets tomentulose or glabrate; stipules 6–7 mm. long, ovate, short-acuminate, sparsely pilose outside; leaves petiolate, the blades herbaceous, obovate-oblong or obovate-spatulate, 24–27 cm. long, 12 cm. wide or less, glabrous above, short-pilose beneath especially along the costa, short-acuminate, rather abruptly narrowed and attenuate to the petiole, the lowest nerves ascending at a very acute angle; panicle pedunculate, lax, 20 cm. long and broad, the lowest branches divaricate or subrecurved; calyx dentate; corolla bright yellow, 3 mm. long, the lobes slightly shorter than the tube. Neg. 469.

Type from Monte Mo on the upper Río Acre in Brazil, *Ule 9852* (photo. and fragm. seen, ex hb. Berol.). The locality is near the Peruvian border, and the species, therefore, is to be expected confidently in Peru.

Psychotria alba R. & P. Fl. 2: 58. pl. 205, f. a. 1799. *Mapouria alba* Muell. Arg. Flora 59: 458. 1876. *Uragoga alba* Kuntze, Rev. Gen. 1: 299. 1891.

A shrub or small tree, 2–6 meters high, the branchlets glabrous or nearly so; stipules large, brown, obtuse, caducous; leaves short-petiolate, the blades mostly 7–16 cm. long, elliptic-oblong to obovate, acute or acuminate, acute or attenuate at the base, glabrous or sometimes sparsely puberulent beneath, usually darkening when dried; inflorescence usually pedunculate, ovoid or rounded, little if at all longer than the leaves, with opposite or verticillate basal branches, the bracts minute, deciduous; flowers short-pedicellate; calyx minutely denticulate; corolla white, 4 mm. long, minutely puberulent or glabrate; fruit subglobose, 4 mm. long, red or blackish.

Ayacucho: Carrapa, 1,000 meters, wooded hillside, *Killip & Smith 22497*.—Cajamarca: Tambillo, *Jelski 371*.—Huánuco: Described from Posuso, Muña, and Chinchao (fragm. seen, ex hb. Berol.). Cochero and Pampayacu, in forest, *Poeppig 1342*.—Junín: La Merced, 1,000 meters, *Weberbauer 1841*. Above San Ramón, 1,400–1,700 meters, forest, *Killip & Smith 24685*.—Loreto: Balsapuerto, 220 meters, *Klug 2929*. Florida, 180 meters, *Klug 2341*. Fortaleza, 140 meters, *Klug 2815, 2768*. Río Masana, *Williams 42*. Balsapuerto, dense forest, *Killip & Smith 28411*. Río Ucayali, *Tessmann 3377, 3290*. Mouth of Río Santiago, *Tessmann 4507*.—San Martín: Juan Guerra, in forest, *Williams 6848*. San Roque, in forest, *Williams 7219, 6959, 7071*. Tarapoto, *Williams 6506, 6623*.

Lamas, *Williams* 6353. Rumizapa, *Williams* 6811. Generally distributed in South America, and perhaps even more widely.

"Ucumi micuna." This species and *P. carthaginensis* are closely related and separable only by artificial characters. It seems probable that ultimately it will be necessary to combine them.

Psychotria Albert-Smithii Standl. Field Mus. Bot. 8: 203. 1930.

A shrub or tree 2.5–7.5 meters high, glabrous except for the inflorescence; stipule sheath 1–1.5 mm. long, the linear-subulate lobes 1–2 mm. long; leaves short-petiolate, the blades papyraceous, elliptic-oblong or obovate-oblong, 10–19 cm. long. 4–7 cm. wide, abruptly acuminate, acute and more or less unequal at the base, bright green when dried, with about 9 pairs of nerves; inflorescence composed of a few umbellate heads, the branches glabrous or sparsely and minutely puberulent, the flowers sessile; calyx acutely 5-dentate; corolla 2 mm. long, glabrous, white or greenish tinged with pink, barbate in the throat, the lobes more than twice as long as the tube; fruit 8 mm. long, deep red.

Loreto: Soledad on the Río Itaya, 110 meters, dense forest, *Killip & Smith* 29766 (type), 29782, 29720. San Antonio, dense forest, *Killip & Smith* 29462, 29411. Between Yurimaguas and Balsapuerto, *Killip & Smith* 28328. Fortaleza, 140 meters, in forest, *Klug* 2772.

Psychotria alboviridula Krause, Notizbl. Bot. Gart. Berlin 6: 208. 1914.

A shrub or small tree 1.5–7.5 meters high with glabrous branchlets; stipules ovate-lanceolate, acute, 6–8 mm. long; leaves short-petiolate or almost sessile, blackish or brownish when dried, the blades elliptic-oblong to lance-oblong, commonly 15–30 cm. long, usually very long-acuminate, acute to obtuse at the base, glabrous, with 10–16 pairs of nerves; panicles chiefly large and many-flowered, open, with few spreading or refracted branches, equaling or longer than the leaves, long-pedunculate; calyx minutely acute-dentate; corolla greenish white, the tube 3–3.5 mm. long, the lobes shorter; fruit deep red or purple. Neg. 468.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26462.—Loreto: La Victoria, in forest, *Williams* 2534, 2803. Caballococha, *Williams* 2316. Masana, *Williams* 8178. Fortaleza, Yurimaguas, edge of forest, *Williams* 4484. Parana Pura, Yurimaguas, in forest, *Williams* 4604. Santa Rosa, 135 meters, *Killip & Smith*

28972. Nuevo Paris, *Tessmann* 3382. Puerto Arturo, *Killip & Smith* 27878. Mishuyacu, 100 meters, *Killip & Smith* 29888. Florida, 180 meters, *Klug* 2303. Iquitos, in forest, *Killip & Smith* 27050, 27046. Yurimaguas, 135 meters, *Killip & Smith* 27680. Type from Seringal San Francisco, Río Acre, presumably in Brazil, *Ule* 9846 (photo. and fragm. seen, ex hb. Berol.). Amazonian Brazil.

Psychotria anceps HBK. Nov. Gen. & Sp. 3: 360. 1820. *P. lucida* HBK. op. cit. 361. pl. 283. 1820.

A glabrous shrub 2 meters high, or sometimes a small tree; stipules large, ovate, acutish, brown; leaves short-petiolate, coriaceous, oblong to lance-oblong or elliptic-oblong, acute or short-acuminate, attenuate at the base, lustrous, blackish when dried; inflorescence corymbiform, pedunculate, trichotomous at the base, the flowers sessile; calyx with triangular, acute or obtuse teeth; corolla white or greenish, 4 mm. long, glabrous; fruit red, globose, 3 mm. long. Neg. 443.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 971. Colombia.

Psychotria Aschersoniana Schum. & Krause, Bot. Jahrb. 40: 330. 1908.

A shrub or small tree with densely yellowish-pilose branchlets; stipules biparted, the subulate lobes 10–15 mm. long; leaves slender-petiolate, large, the blades oblong-lanceolate, very long-acuminate, acute or attenuate at the base, conspicuously and closely bullate, densely pubescent; inflorescence much shorter than the leaves, paniculate, at first very dense but in fruit becoming more open, the flowers short-pedicellate; calyx obsoletely denticulate; corolla yellow or white, glabrous outside; fruit black, glabrous, 4 mm. long.

Cajamarca: Tambillo, *Raimondi* 6785. Ranging to the mountains of Colombia.

Psychotria brachiata Sw. Prodr. 45. 1788. *P. caerulea* R. & P. Fl. 2: 62. pl. 213, f. b. 1799. *Palicourea caerulea* R. & S. Syst. Veg. 5: 194. 1819. *Cephaelis polycéphala* Schlecht. Linnaea 28: 532. 1856.

A shrub with glabrous branches; stipules short, green, persistent, bilobate, the broad lobes obtuse or rounded; leaves on rather slender petioles, the blades oblong-obovate to oblong-elliptic, short-acuminate, acute or attenuate at the base, glabrous or nearly so, often

pilose beneath along the costa; inflorescence long-pedunculate, thyrsoid-paniculate or racemose, the opposite branches divaricate, subtended at the base by long, narrow bracts, the flowers in small, dense, many-bracted heads; corolla blue or white; fruit blue.

Huánuco: Type of *P. caerulea* from Vitoc, Ruiz & Pavón. Prov. Huamalíes, Weberbauer 3593.—Loreto: Above Pongo de Manseriche, 200 meters, Mexia 6328.—Puno: Sangabán, Lechler 2364, type collection of *Cephaelis polycephala*.—San Martín: Tocache, Poeppig in 1830. Widely distributed in tropical America.

Psychotria Buchtieni (Winkl.) Standl. Field Mus. Bot. 7: 303. 1931. *Uragoga Buchtieni* Winkl. Repert. Sp. Nov. 8: 5. 1910.

A stiff shrub 1–4 meters high, glabrous or nearly so except in the inflorescence; stipules short, bilobate, the narrow lobes 1–2 mm. long; leaves short-petiolate, ovate-oblong to oblong-elliptic, long-acuminate, acute or acuminate at the base, sparsely short-pilose beneath along the nerves; inflorescence pedunculate, small and compact, rounded, densely short-pilose, radiately branched at the base, the flowers glomerate and sessile, the bracts foliaceous, as long as the flowers; calyx truncate and 5-denticulate; corolla white, pilosulous, 4–5 mm. long, densely barbate in the throat; fruit 4 mm. long. Neg. 717.

Loreto: Mishuyacu near Iquitos, 100 meters, in forest, Klug 686. Also in Bolivia.

Psychotria bullatifolia Standl. Field Mus. Bot. 8: 193. 1930.

Plants suffrutescent or herbaceous, simple, the stems 10–12 cm. long or more, sparsely puberulent or glabrous; leaves few, petiolate, the blades herbaceous, oblong or oval-oblong, 7–12 cm. long, 3.5–5.5 cm. wide, obtuse or rounded at the apex and short-apiculate, acute to almost rounded at the base, strongly bullate, sparsely sordid-pilosulous beneath, with about 13 pairs of nerves; inflorescences axillary, slender-pedunculate, head-like, densely many-flowered, almost 1 cm. broad; pedicels in fruit as much as 4 mm. long; fruit oval, 6 mm. long, glabrous.

Loreto: Pebas, on the Amazon, in forest, Williams 1803 (type), 1666, 1662.

Psychotria calochlamys Standl. Field Mus. Bot. 8: 199. 1930.

A shrub 1–2 meters high, the branches glabrous or very minutely puberulent; stipules green or reddish, bifid almost to the base, 1.5–2.8 cm. long, the lobes long-attenuate; leaves short-petiolate, sub-

coriaceous or thinner, the blades lance-oblong to elliptic-oblong or rarely ovate, 7.5–20 cm. long, 2.5–7 cm. wide, very long-acuminate, acute at the base, glabrous or minutely puberulent beneath on the costa, with about 15 pairs of nerves; inflorescence long-pedunculate, consisting of a head-like cyme 2–6 cm. broad, or in fruit more open, the bracts pink or purple, about equaling the flowers, very showy; corolla pink, glabrous outside, 12 mm. long, the lobes 2–2.5 mm. long; fruit deep purple, oval, 6–7 mm. long.

Loreto: Santa Ana on the upper Río Nanay, *Williams* 1226, type. Río Nanay, *Williams* 752, 839. Timbuchi, in forest or inundated places, *Williams* 1042, 1041. Río Itaya near Iquitos, 110 meters, *Killip & Smith* 29387. Mouth of Río Santiago, 160 meters, *Tessmann* 3952. Soledad, 110 meters, *Tessmann* 5296. Mishuyacu, *Klug* 730, 829, 688, 357. Iquitos, *Williams* 1502, 3679; *Killip & Smith* 27194, 27000, 27002.

“Chirapa shacha,” “shuturi.” The shrub must be a handsome one when growing because of the brightly colored inflorescences. *Tessmann* reports that the bracts are sometimes white.

Psychotria candelabrum Standl. Field Mus. Bot. 8: 207. 1930.

A shrub with velvety-pilosulous branchlets; stipule sheath 1–1.5 mm. long, the triangular, acute lobes 4–5 mm. long; leaves short-petiolate, firm-membranaceous, the blades obovate-elliptic, 20–24 cm. long, 9–10 cm. wide, caudate-acuminate, cuneately narrowed to the base, puberulent or minutely pilosulous on the veins; inflorescence cymose-umbellate, pedunculate, small and dense, 3.5 cm. wide, the pale branches velvety-pilosulous, naked at the base, the small, dense cymes almost head-like; bracts linear or subulate, 3–6 mm. long; calyx acutely dentate, pilosulous.

Loreto: La Victoria on the Amazon, in forest, *Williams* 2702, type.

Psychotria capitata R. & P. Fl. 2: 59. pl. 206, f. a. 1799. *Cephaelis peruviana* Spreng. Syst. Veg. 1: 749. 1825. *P. inundata* Benth. in Hook. Journ. Bot. 3: 229. 1841. *P. arcuata* Benth. loc. cit.

A shrub 1–3 meters high, glabrous except in the inflorescence; stipules green, biparted, with long, subulate lobes, those near the ends of the branches lanceolate and longer; leaves short-petiolate, lanceolate to oblong-elliptic or oval, acuminate, acute or obtuse at the base, dull green when dried, with numerous pale nerves; inflorescence pedunculate, paniculate, rather dense, shorter than the leaves, small, the branches pubescent, opposite or verticillate;

bracts lanceolate or linear, green or whitish, about equaling the flowers; calyx teeth unequal; corolla white or ochroleucous, glabrous, 8–9 mm. long, the lobes almost equaling the tube; fruit subglobose, 4 mm. long, coarsely costate, black. Neg. 510.

Huánuco: Type from Chinchao, *Ruiz & Pavón*. Cochero, *Poeppig* 2035.—Junín: La Merced, 1,200 meters, sunny thickets, 5730. Above San Ramón, 1,400–1,700 meters, *Killip & Smith* 24707. Chanchamayo Valley, 1,200–1,800 meters, *Schunke* 427, 263, 1378, 327.—Loreto: La Victoria, in forest, *Williams* 2960. San Antonio, 110 meters, *Killip & Smith* 29355. Mouth of Río Tigre, wooded bank, *Killip & Smith* 27520. Paraíso, *Williams* 3304. Mishuyacu, *Klug* 973. Mainas, *Poeppig*. Alto Río Itaya, *Williams* 3429.—San Martín: Tarapoto, *Williams* 6593, 5875, 6091, 6068, 6113; *Ule* 6555. Lamas, *Williams* 6345. Ranging from Bolivia and Brazil to the Guianas, Trinidad, and Central America.

“Cucha caspi,” “trompetero caspi.” If I have interpreted *P. capitata* correctly, as I think is the case, *P. inundata* is a clear synonym. It appears likewise that *P. chlorotica* Muell. Arg., a name under which some of the Peruvian material has been distributed, should be reduced to synonymy under *P. capitata*. The characters used by Mueller in separating *P. chlorotica* and *P. inundata* are certainly of little or no importance.

Psychotria carthaginensis Jacq. Enum. Pl. Carib. 16. 1760. *P. foveolata* R. & P. Fl. 2: 59. pl. 207, f. b. 1799. *Uragoga foveolata* Gómez, Anal. Hist. Nat. Madrid 23: 294. 1894.

A nearly glabrous shrub 1–3 meters, high; stipules large, thin, obovate, obtuse, brownish; leaves short-petiolate, the blades lance-elliptic to oblong-obovate, broadest at or above the middle, acute or acuminate, acute to attenuate at the base, puberulent beneath along the nerves or glabrate; inflorescence pedunculate, paniculate, open, usually radiately branched at the base, many-flowered, the minute bracts deciduous; calyx obsoletely denticulate; corolla white, glabrous or minutely puberulent, 4 mm. long; fruit red, 4 mm. long. Neg. 483.

Amazonas: Chachapoyas, *Mathews*.—Huánuco: Type material from Chinchao and Cochero, *Ruiz & Pavón* (photo. and fragm. of authentic specimen seen, ex hb. Berol.). Posuso, 600 meters, 4677. Cuschi, 1,500 meters open forest, 4854. Yanano, 1,800 meters, sunny slope, 3718. Río Huallaga Canyon below Río Santo Domingo, 1,200 meters, in forest, 4196.—Junín: Chanchamayo, *Raimondi* 2757.

—Loreto: Ucayali Valley, *Tessmann 3382, 3302*.—Puno: Near Sandía, 1,500–2,000 meters, *Weberbauer 1073*.—San Martín: Tarapoto, *Williams 5809; Spruce 4288*. Río Mayo, *Spruce 4350*. Widely distributed in South and Central America.

The determinations of some of the specimens cited are more or less uncertain. In this species the leaves often are domatiate beneath, that is, provided along the costa with small, sack-like structures that house parasites.

***Psychotria compta* Standl.** Field Mus. Bot. 8: 202. 1930.

Plants shrubby or only suffrutescent, 0.5–3.5 meters high, simple or branched, glabrous outside the inflorescence; stipules 7 mm. long, connate into a sheath 2 mm. long, the lobes broadly ovate-triangular, obtuse; leaves large, short-petiolate, the blades firm-membranaceous, broadly elliptic or ovate-elliptic or rarely oblong-ovate, 13–26 cm. long, 6–15 cm. wide, cuspidate-acuminate, acute or obtuse at the base and often abruptly decurrent, bright green when dried, paler beneath, with about 12 pairs of nerves; inflorescence pedunculate, cymose-paniculate, broadly ovoid, about 5–6 cm. long and broad, the branches not bracteate at the base, often reflexed in fruit, the flowers sessile or nearly so; corolla ochroleucous, minutely puberulent, the tube 5–8 mm. long, the lobes 2.5–3 mm. long; fruit pale blue or white, didymous-globose, 6–9 mm. wide.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith 22903*.—Junín: Eneñas, 1,700 meters, dense forest, *Killip & Smith 25633*. Above San Ramón, 1,500 meters, *Killip & Smith 24584, 24601*.—Loreto: Yurimaguas, 135 meters, in forest, *Killip & Smith 29098* (type), *27590, 27968, 29038; Williams 3881*.

***Psychotria costato-venosa* Schlecht.** *Linnaea* 28: 497. 1856.

Branches glabrous; stipules connate into a sheath 4 mm. long, obtusely bilobate at the apex; leaves short-petiolate, the blades broadly elliptic, 7.5–10 cm. long, 3.5–5 cm. wide, acute at base and apex, pilose on both sides along the costa, coriaceous, with 12–14 pairs of lateral nerves; inflorescence paniculate, terminal, few-flowered, glabrous, the bracts elongate-triangular; calyx lobes ovate, acutish; corolla puberulent at the apex, the lobes longer than the tube; fruit nearly 12 mm. long and 8 mm. wide, 8-costate. Neg. 25777.

Puno: Type from Tabina, *Lechler 2077*. Known to the writer only from the original description and a leaf; probably a species of *Pali-courea*. The inflorescence is not shown in the photograph cited.

Psychotria cupularis (Muell. Arg.) Standl. Field Mus. Bot. 8: 210. 1930. *Mapouria cupularis* Muell. Arg. Flora 59: 459, 465. 1876.

A shrub or small tree, glabrous or nearly so; stipules brownish, obtuse; leaves on short or somewhat elongate petioles, the blades subcoriaceous, dark when dried, oblong-obovate or elliptic-obovate, 3-7 cm. wide, rounded or obtuse at the apex and shortly cuspidate-acuminate, acute to long-attenuate at the base; inflorescence small, umbel-like or paniculate, the bracts small and inconspicuous, the flowers sessile or almost so; calyx obscurely denticulate; corolla white, 6-7 mm. long, barbate in the throat, the lobes almost equaling the tube. Neg. 6066.

Loreto: Pebas on the Amazon, in forest, *Williams* 1749. Also in Amazonian Brazil.

Psychotria cuspidata Bredem. ex R. & S. Syst. Veg. 5: 192. 1819.

A slender, glabrous shrub or small tree, 1-5.5 meters high; stipules green, persistent, short, bicuspidate; leaves thin, short-petiolate, bright yellowish green when dried, the blades ovate to elliptic or oblong-elliptic, very narrowly long-acuminate, usually with a curved acumination, acute to obtuse at the base; inflorescence pedunculate, thyrsoïd-paniculate, much shorter than the leaves, rather few-flowered, the few pale branches sometimes reflexed, not bracted at base; calyx minute, truncate; corolla glabrous, 5 mm. long, pale yellow or white; stamens exserted; fruit didymous-globose, smooth. Neg. 534.

Cajamarca: Tambillo, *Raimondi* 6201, 7427.—Huánuco: Cochero, *Poeppig* 1598.—Junín: Puerto Yessup, 400 meters, dense forest, *Killip & Smith* 26267.—Loreto: Manfinfa, Alto Río Nanay, *Williams* 1128. Sierra del Pongo, 500 meters, *Mezía* 6268. Timbuchi, in forest, *Williams* 948. Iquitos, 100 meters, *Killip & Smith* 27023, 27003; *Tessmann* 3696. Caballo-cocha, in forest, *Williams* 2262. Peña Blanca, 110 meters, *Killip & Smith* 29656.—San Martín: Tarapoto, *Williams* 6114, 5884, 5879; *Spruce* 4903. San Roque, *Williams* 7510, 6947. Widely distributed in tropical America.

"Yaku shuturi." *Tessmann* 3696 is referable to the var. *compacta* Muell. Arg., in which the inflorescence is dense and compact, rather than open, as is more usual for the species.

Psychotria cuspidulata (Krause) Standl. Field Mus. Bot. 8: 201. 1930. *Cephaelis cuspidulata* Krause, Notizbl. Bot. Gart. Berlin 8: 102. 1922.

A glabrous shrub 3 meters high; stipules 4–6 mm. long, bidentate; leaves short-petiolate, thick-membranaceous, yellowish green when dried, the blades ovate-oblong or ovate-lanceolate, 15–20 cm. long, 5.5–7 cm. wide, narrowly long-acuminate, obtuse or acutish at the base; inflorescence pedunculate, small, cymose but dense and almost head-like, many-flowered; calyx lobes lanceolate, acute; corolla whitish, sparsely whitish-pilose, the tube 5–7 mm. long. Neg. 718.

Loreto: Cerro de Escalera, 1,200 meters, *Ule 6551*, type (photo. and fragm. seen, ex hb. Berol.).

***Psychotria educta* Standl. Field Mus. Bot. 11: 237. 1936.**

A shrub 3 meters high, the branches glabrous; stipules deciduous, very broadly ovate or elliptic, 2–2.5 cm. long, acute or acuminate, sparsely ferruginous-villosulous, equaling or longer than the petioles; leaves very shortly petiolate, chartaceous, oblanceolate, oblong-oblanceolate, or rhombic-oblanceolate, 23–33 cm. long, 7–10 cm. wide, gradually acuminate, gradually long-attenuate to the base, glabrous above or nearly so, beneath at first ferruginous-villosulous or puberulent, soon glabrate, the lateral nerves about 16 pairs; inflorescence terminal, pedunculate, laxly paniculate, large, the slender branches mostly verticillate, spreading or subreflexed, sparsely puberulent or glabrate, bracteate at the base, the flowers umbellately clustered, the pedicels 1–2 mm. long; calyx 1.2 mm. long, truncate, remotely repand-denticulate; corolla ochroleucous, glabrous outside, 2.5 mm. long, the throat not barbate, the lobes glabrous within; anthers exerted.

Loreto: In upland forest at the edge of a stream, mouth of the Río Santiago, upper Río Marañón, 160 meters, *Tessmann 4057*, type.

***Psychotria egensis* Muell. Arg. Flora 59: 542, 545. 1876.**

A shrub 1 meter high with rather stout, glabrous branchlets; stipules short, persistent, shallowly bilobate, the lobes rounded; leaves short-petiolate, yellowish green, the blades thick, oblong or oblong-elliptic, acute or short-acuminate, acute at the base; inflorescence terminal, pedunculate, the flowers in head-like, long-pedunculate clusters racemosely arranged along a stout rachis, the stout branches opposite, glabrous; bracts broad, conspicuous, as long as the flowers, ciliate, none present at the base of the branches; corolla white, glabrous outside.

Junín: La Merced, 1,200 meters, *5748*.—San Martín: Mountains along the Río Mayo near Tarapoto, *Spruce 4347*. San Roque, *Williams 7416*. Amazonian Brazil.

Psychotria emetica L. f. Suppl. Pl. 144. 1781. *Cephaelis emetica* Pers. Syn. Pl. 1: 203. 1805. *Uragoga emetica* Baill. Hist. Pl. 7: 371. 1880. *C. plagiantha* Standl. Field Mus. Bot. 11: 190. 1936.

Stems usually simple, woody or only suffrutescent, 30 cm. high or more, puberulent; stipules free, 3–4 mm. long, triangular-lanceolate, acuminate; leaves short-petiolate, dark when dried, the blades elliptic-oblong to oblanceolate-oblong, acute or acuminate, acute to long-attenuate at the base, glabrous above, puberulent beneath; inflorescences axillary, about as long as the petioles, solitary or geminate, bearing a few capitate, subsessile flowers, the bracts minute; calyx obscurely dentate; corolla white, 5 mm. long, glabrous; fruit 6 mm. long, bright blue.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith 22876*.—Loreto: Florida, *Klug 2045*, type of *C. plagiantha*. San Antonio, *Ule 6769*. Bolivia to Central America, in lowland forests.

Called “*ipecacuana falsa*” in Bolivia, and “*raicilla*” in Panama. The roots, which have a strong and somewhat nauseous odor, are one of the sources of the drug *ipecac*, but they are said to be much inferior to those of *Cephaelis Ipecacuanha*.

Psychotria epiphytica Krause, Bot. Jahrb. 40: 430. 1908, nomen; Verh. Bot. Ver. Brandenb. 50: 108. 1908.

A small, glabrous, epiphytic shrub; stipules united below, the free portion entire, ovate, acute, 4–5 mm. long; leaves short-petiolate, thick-coriaceous, fleshy when green, the blades oblong-ovate to oblong, 6–8 cm. long, 3–3.5 cm. wide, acute or acuminate, obtuse to subtruncate at the base; inflorescence paniculate, pedunculate, very lax and open, many-flowered, equaling or much exceeding the leaves, the pedicels 2–4 mm. long; calyx obsoletely dentate; fruit black, 3–4 mm. in diameter. Neg. 462.

Loreto: Cerro de Escalera, 1,400 meters, *Ule 6692*, type (photo. and fragm. seen, ex hb. Berol.).

Psychotria Ernesti Krause, Verh. Bot. Ver. Brandenb. 50: 109. 1908.

A nearly glabrous shrub or small tree, 1–3 meters high, with stout branchlets; stipules oblong-ovate, obtuse or acutish, 2 cm. long or less; leaves large, short-petiolate, often darkening when dried, the blades elliptic to rounded-elliptic, 9–13 cm. wide, acute, rounded to acute at the base, with 15–19 pairs of nerves; inflorescence pedunculate, large but usually shorter than the leaves, radiately branched

at the base, many-flowered and rather dense; calyx obsoletely 5-dentate; corolla white, glabrous outside, the tube 2-2.5 mm. long, densely barbate in the throat. Neg. 459.

Loreto: Florida, 180 meters, in forest, *Klug* 2327. Río Sungarosa, 200 meters, stream border, *Meria* 6305. Fortaleza, Yurimaguas, edge of water, *Williams* 4341, 4445, 4242. Middle Río Ucayali, 150 meters, *Tessmann* 3302. Also in Brazil along the upper Amazon, and in Colombia.

Psychotria falcata Rusby, Mem. Torrey Club 3, pt. 3: 47. 1893.

An almost glabrous shrub; stipules 3-4 mm. long, united below, bilobate, the very short lobes obtuse; leaves short-petiolate, olive-green when dried, the blades oblong or elliptic-oblong, medium-sized, long-acuminate, acute at the base; inflorescence long-pedunculate, cymose-paniculate, narrow but open, many-flowered, the branches puberulent, some of them often reflexed, the bracts minute; flowers sessile or nearly so; calyx acutely dentate; corolla glabrous, 7 mm. long, the short lobes obtuse.

Junín: Chanchamayo Valley, *Schunke* 409. Above San Ramón, 1,400-1,700 meters, *Killip & Smith* 24596.—San Martín: Tarapoto, *Williams* 5962. Also in Bolivia.

Psychotria Herzogii S. Moore, Med. Rijksherb. 46: 25. 1922.

A slender, glabrous shrub 1 meter high or less; stipules biparted, 6-8 mm. long, with subulate segments; leaves firm-membranaceous, green when dried, subsessile, ovate-oblong, 2-4 cm. wide, acuminate to obtuse, obtuse or rounded at the base; inflorescences cymose-paniculate, pedunculate, dense, few-flowered, much shorter than the leaves, the bracts equaling the flowers; calyx obscurely denticulate; corolla white, almost 1 cm. long, glabrous outside; fruit blue, didymous, glabrous, 5 mm. in diameter.

Loreto: Yurimaguas, *Poeppig* 2124. San Antonio, in forest, *Williams* 3413. Fortaleza, Yurimaguas, edge of forest, *Williams* 4393, 4218. Soledad, 110 meters, dense forest, *Killip & Smith* 29699, 29569. Mouth of Río Santiago, 160 meters, *Tessmann* 4264. Santa Rosa, 135 meters, *Killip & Smith* 28712. Also in Bolivia.

Psychotria Hoffmannseggiana R. & S. Syst. Veg. 5: 214. 1825.

A small, slender shrub with glabrous or obscurely puberulent branchlets; stipules 1 mm. long, biparted, with narrow lobes; leaves small, membranaceous, very shortly petiolate, the blades lance-oblong or elliptic-oblong, 3-8 cm. long, acute or acuminate, acute

and oblique at the base, glabrous or nearly so; flower heads short-pedunculate, few-flowered, small, subtended by 2 conspicuous, narrow, elongate bracts; calyx minutely 5-dentate; fruit 3 mm. long. Neg. 745.

Loreto: Río Nanay, in forest, *Williams* 832, 853. Amazonian Brazil and the Guianas.

***Psychotria hospitalis* Standl.** Field Mus. Bot. 8: 199. 1930.

A nearly glabrous shrub 3 meters high; stipules 5 mm. long, triangular-ovate, acute; leaves blackish when dried, short-petiolate, the blades thick-membranaceous, oblong or obovate-oblong, 7–11 cm. long, 2–4.5 cm. wide, abruptly acuminate or long-acuminate, attenuate to the base, furnished beneath along the costa with large and conspicuous shelters for parasites; inflorescence pedunculate, cymose-paniculate, lax and open, many-flowered, 2.5–3 cm. long and broad; corolla white; calyx 5-dentate; fruit 6 mm. long, glabrous, coarsely costate.

Loreto: Río Nanay, in forest, *Williams* 845, type. Puerto Arturo, Yurimaguas, in pasture, *Williams* 5189. Pongo de Manseriche, *Mexia* 6337. Also in Colombia.

***Psychotria huallagae* Standl.** Field Mus. Bot. 8: 376. 1931.

A glabrous shrub; stipules bifid, the segments linear-filiform; leaves subsessile, membranaceous, dull green when dried, the blades oblanceolate-oblong or narrowly elliptic-oblong, 6–11 cm. long, 2–4 cm. wide, abruptly acute or short-acuminate, slightly narrowed to the acute base, the lateral nerves about 12 pairs; inflorescence pedunculate, half as long as the leaves, cymose-paniculate, broadly pyramidal, 2 cm. long and 3.5 cm. wide, the flowers sessile or nearly so; calyx 5-dentate; fruit 5 mm. long, glabrous, obscurely costate.

Loreto: Puerto Arturo, Yurimaguas, 150–200 meters, *Williams* 5265, type. Amazonian Brazil.

***Psychotria huantensis* Standl.** Field Mus. Bot. 8: 196. 1930.

A shrub 3–3.5 meters high, the branchlets sparsely hirtellous; stipules short-connate, the segments lance-triangular, 4–5 mm. long; leaves short-petiolate, green when dried, thin-coriaceous, the blades oblong or lance-oblong, 16 cm. long and 5.5 cm. wide, short-cuspidate, subobtuse or rounded at the base, sparsely hispidulous beneath on the veins or glabrate; inflorescence pedunculate, paniculate, narrowly pyramidal, 13 cm. long and 10 cm. wide, the branches spreading or subreflexed, densely pilosulous, much elongate, the flowers more

or less secund, sessile; calyx minute, truncate; fruit subglobose, 4 mm. long, hirtellous.

Ayacucho: Estrella, in dense woods, 500 meters, *Killip & Smith 22633*, type.

A relative of *Psychotria patens* Sw.

***Psychotria involucrata* Sw. Prodr. 45. 1788.**

A nearly glabrous shrub or small tree, 1-6 meters high; stipules short, green, truncate and bicuspidate; leaves petiolate, firm, medium-sized, lanceolate to ovate or oblong-elliptic, long-acuminate, abruptly contracted and decurrent at the base, dull green when dried; inflorescence pedunculate, less than a third as long as the leaves, commonly 1-2 cm. long, dense and contracted, rather few-flowered, the short branches purplish, pubescent, the flowers sessile or nearly so; outer bracts narrow, much longer than the flowers; calyx denticulate; corolla creamy or greenish white; fruit globose, 4 mm. long, variously described as purple, purple-black, light blue, or white. "Yaku shuturi."

Huánuco: Reported from Chicoplaya, *Ruiz* (teste Urban).—Junín: Yapas, 1,400 meters, dense forest, *Killip & Smith 25501, 25605*.—Loreto: Río Nanay, in forest, *Williams 1056*. Timbuchi, *Williams 862, 1037, 874, 869*. Iquitos, 100 meters, *Williams 8091; Killip & Smith 27350, 29745*. Punchana, *Williams 8006*. Mainas, *Poeppig Add. 28*. La Victoria, *Williams 2705*. Fortaleza, Yurimaguas, in forest, *Williams 4252*. Santa Rosa, *Williams 4842*. Yurimaguas, *Williams 4110*.—San Martín: San Roque, *Williams 7311*. Lamas, *Williams 6394*. Widely distributed in tropical America.

***Psychotria iquitosensis* Standl. Field Mus. Bot. 8: 195. 1930.**

A shrub 3.5 meters high or less, glabrous except in the inflorescence; stipules green, connate into a short sheath, the linear-subulate lobes 3-4 mm. long; leaves short-petiolate, thick-membranaceous, bright or yellowish green when dried, the blades lance-oblong or ovate-oblong, 7-17 cm. long, 2.5-6 cm. wide, very long-acuminate, acute at the base or abruptly contracted and decurrent; inflorescence pedunculate, cymulose-racemose, about 1.5-3.5 cm. long and broad, the branches divaricate or subreflexed, sparsely and minutely pilose or glabrate, simple or trifid at the apex, the lanceolate, persistent bracts 2-5 mm. long; calyx minutely denticulate; corolla white, glabrous, the tube 2.5-3 mm. long, barbate in the throat, the lobes 1.5 mm. long; fruit purple or deep blue, 3-3.5 mm. long.

Loreto: Near Iquitos, *Williams* 1891 (type), 1524, 3633; *Killip & Smith* 27244, 27208, 26926, 27019. Punchana, *Williams* 1837. Santa Rosa, 135 meters, dense forest, *Killip & Smith* 28746, 28792. Florida, 180 meters, riverside forest, *Klug* 2271. "Mitir-ey" (Huitoto name).

Psychotria japurensis Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 328. 1881.

A shrub, the branchlets minutely puberulent or tomentulose; stipules 3 mm. long, the lobes linear-subulate, rigid; leaves firm-membranaceous, short-petiolate, yellowish green when dried, the blades ovate to elliptic-oblong, 10-17 cm. long, long-acuminate, cuneate-acute at the base, finely puberulent beneath; inflorescence capitate-umbellate, short-pedunculate, the heads small and dense, short-stalked, the linear bracts conspicuous and greatly exceeding the flowers; calyx obtusely dentate; corolla rufous-hirtous, 4 mm. long; fruit globose, costate, 3-4 mm. long. Neg. 6085.

Loreto: Pebas on the Amazon, in forest, *Williams* 1681. Also in Amazonian Brazil.

Psychotria juninensis Standl. Field Mus. Bot. 8: 206. 1930.

A slender, glabrous shrub 1.5-2 meters high; stipules small, acuminate, deciduous; petioles short and slender, the blades membranaceous, pale-marginate, oblong-elliptic, 7-9.5 cm. long, 2-3.5 cm. wide, caudately long-acuminate, acute at the base, with about 7 pairs of nerves; inflorescence almost equaling the leaves, slender-pedunculate, cymose-corymbose, 5 cm. wide, the bracts minute, the pedicels 3 mm. long; calyx truncate or remotely denticulate; corolla greenish white.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26525, type. Above Pongo de Manseriche, 200 meters, dense forest, *Mexia* 6230.

Psychotria Klugii Standl. Field Mus. Bot. 8: 377. 1931.

A shrub 1.5 meters high, the branches glabrous; stipules persistent, oval-ovate, 1 cm. long, acutish, glabrous; leaves short-petiolate, narrowly lance-oblong, 23-31 cm. long, 7-8.5 cm. wide, narrowly attenuate-acuminate, long-attenuate to the base, thick-membranaceous, glabrous, the lateral nerves about 12 pairs; inflorescence terminal, pedunculate, composed of umbellately disposed heads on peduncles 6-10 mm. long, the heads 1 cm. in diameter, dense, few-flowered, the outer bracts broadly ovate or oval, obtuse,

6–8 mm. long, glabrous; flowers white, sessile; calyx 0.6 mm. long, obsoletely repand-denticulate.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 835* (type), 519.

Psychotria limitanea Standl. Field Mus. Bot. 8: 197. 1930.

A shrub, glabrous except in the inflorescence; stipule lobes linear-subulate, 2 cm. long; petioles short and stout, 7 mm. long or less; leaf blades green when dried, coriaceous, narrowly margined, narrowly oblong, 26 cm. long, 8 cm. wide, acuminate, rounded at the base; inflorescence long-pedunculate, cylindric-paniculate, 20 cm. long and 4 cm. wide, the branches more or less reflexed, hispidulous-puberulent, not bracted at the base, the flowers often secund; calyx minute, subtruncate; fruit didymous-globose, glabrous, 5 mm. broad, prominently nerved.

Loreto: La Victoria, on the Amazon, in forest, *Williams 3006*, type.

Psychotria loretensis Standl. Field Mus. Bot. 8: 198. 1930.

A slender shrub 2.5–4.5 meters high, glabrous except in the inflorescence; stipules connate into a short sheath, the lobes subulate, 3–4 mm. long; leaves coriaceous, green when dried, short-petiolate, the blades mostly oblong or lance-oblong, 10–24 cm. long, 3–8 cm. wide, long-acuminate, acute or obtuse at the base; inflorescence pedunculate, cylindric-paniculate or narrowly pyramidal-paniculate, 5–18 cm. long, 3–9 cm. wide, laxly many-flowered, the short branches spreading or reflexed, glabrous or minutely puberulent, the flowers often somewhat secund; calyx obtusely lobulate; corolla yellow, glabrous outside, 5 mm. long, the throat glabrous; fruit orange, subglobose, 4–5 mm. in diameter.

Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith 26561*. Santa Rosa, 700 meters, *Killip & Smith 26179, 26167*.—Loreto: Iquitos, 100 meters, in woods, *Killip & Smith 27482* (type), 26988; *Williams 3788, 8108*. Punchana, in forest, *Williams 3771*. Mishuyacu, 100 meters, *Klug 631, 535, 839; Killip & Smith 29862*. Río Nanay, *Williams 856, 720*. Timbuchi, edge of jungle, *Williams 1016*. Balsapuerto, 150–350 meters, *Killip & Smith 28398, 28606, 28405, 28388, 28542*. Florida, 200 meters, in forest, *Klug 2019*; a form with very large and lax inflorescence.

Psychotria lupulina Benth. in Hook. Journ. Bot. 3: 230. 1841.

A shrub, glabrous except in the inflorescence; stipules connate into a short, truncate sheath with short, subulate lobes; leaves green

when dried, medium-sized or large, short-petiolate or subsessile, the blades ovate to elliptic or obovate, acuminate, rounded to acute at the base; inflorescence long-pedunculate, cymose-capitate, the bracts equaling the flowers, numerous, linear-lanceolate to ovate, acute to acuminate, usually red or reddish, the branches puberulent; calyx minutely dentate; corolla white, glabrous outside, 1 cm. long or less. Neg. 25795.

Loreto: Pebas, on the Amazon, in forest, *Williams 1813, 1812*. Caballo-cocha, in forest or clearings, *Williams 2289, 2232*. La Victoria, *Williams 2976, 2944, 2529, 2530*. Bolivia and Brazil to the Guianas.

Psychotria luxurians Rusby, Mem. Torrey Club 6: 50. 1896.

A shrub with glabrous branches; stipules triangular, short-bifid at the apex; leaves membranaceous, large, slender-petiolate, oblong-elliptic, long-acuminate, acute at the base, green or somewhat darkened when dried, minutely puberulent on the nerves; inflorescence laxly paniculate, 10-30 cm. long, pyramidal, the branches puberulent, somewhat deflexed, the flowers sessile or pedicellate; calyx teeth acute; corolla 4 mm. long, glabrous outside, the short lobes acute; fruit 3-4 mm. long. Neg. 614.

Reported by Rusby (loc. cit.) from Peru, *Mathews 1167*. I have seen also a specimen collected by Ruiz and Pavón, without locality. Bolivia, Ecuador, and Colombia.

Psychotria macrophylla R. & P. Fl. 2: 56. pl. 202, f. a. 1799.

Plants usually simple and suffrutescent, 1 meter high or less, or sometimes as much as 3 meters high, the stems glabrous or pruinose-puberulent; stipules short and soon deciduous, apiculate; leaves large, herbaceous, mostly green when dried, petiolate, the blades oblong to elliptic, acuminate, acute or attenuate at the base, glabrous or pruinose-puberulent beneath on the nerves; inflorescence axillary, on long or short peduncles, paniculate, short and few-flowered or often larger and many-flowered, usually lax, the branches often reflexed, the flowers sessile; bracts minute or small and inconspicuous; calyx denticulate; corolla greenish white or yellowish, glabrous, 4-5 mm. long; fruit white (reported also as red), 4-5 mm. long. Negs. 480, 511.

Huánuco: Type from Iscutuna, near Pillao, *Ruiz & Pavón* (photo. seen, ex hb. Berol.).—Junín: La Merced, 600 meters, in forest, 5515; *Killip & Smith 23727, 23981*. San Nicolás, 1,100 meters, dense forest, *Killip & Smith 26025*. Cahuapanas, 340 meters, *Kil-*

lip & Smith 26713. East of Huacapistana, 2,100 meters, *Weberbauer 2110*.—Loreto: La Victoria, in forest, *Williams 3012, 3138, 2565*. Huallaga, Yurimaguas, *Williams 4669*. San Antonio, *Williams 3460*. Soledad, 110 meters, *Killip & Smith 29599*. Balsapuerto, *Killip & Smith 28578*.—San Martín: San Roque, in forest, *Williams 7194, 7630*. Cerro Campana, *Spruce 4317*. Moyobamba, *Mathews*. Bolivia to Central America, mostly at low elevations and in deep forest.

The species appears to be abundant in many parts of its range, and naturally exhibits a large amount of variation, especially in the shape of the leaves and form of the inflorescence. It may well be that the material referred here represents more than a single species, but I have been unable to discover any satisfactory basis for dividing it.

***Psychotria Marcgraviella* Standl.** Field Mus. Bot. 8: 375. 1931.

A slender shrub 60 cm. high, the branchlets rusty-hispidulous; stipules linear-lanceolate, 3 mm. long, hispidulous; leaves blackening when dried, subsessile, membranaceous, oblong, 3–4.5 cm. long, 1–1.5 cm. wide, acute, broadly rounded and cordate at the base, rusty-pilous on the costa; inflorescence slender-pedunculate, cymose-corymbose, 3–4 cm. broad, lax and few-flowered, the branches glabrous, the glabrous pedicels 2–4 mm. long; calyx acutely 4-dentate; corolla ochroleucous, glabrous, 2.5 mm. long.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug 494*, type.

Easily recognized by the small, sessile leaves with cordate bases.

***Psychotria marginata* Sw.** Prodr. 43. 1788.

A nearly glabrous shrub 1–2 meters high; stipules large, brown, entire, caducous; leaves short-petiolate, darkening when dried, rather small, the blades obovate to obovate-oblong, acute or acuminate, attenuate to the base, minutely puberulent beneath or glabrate; inflorescence long-pedunculate, openly paniculate, many-flowered, with opposite or verticillate branches, the minute bracts deciduous, the pedicels 2–5 mm. long; calyx teeth short, obtuse; corolla yellowish white, scarcely 3 mm. long, glabrous outside; fruit globose, glabrous, 3–4 mm. long. Neg. 514.

Loreto: Masisea, 275 meters, open woods, *Killip & Smith 26840*.—San Martín: Mountains along Río Mayo, near Tarapoto, *Spruce 4875*. Pongo de Cainarachi, 230 meters, in forest, *Klug 2754*. Widely distributed in tropical America.

Resembling *P. alba*, but with conspicuously smaller flowers, usually on more elongate pedicels.

***Psychotria Mathewsii* Standl.** Field Mus. Bot. 4: 342. 1929.

A shrub or small tree 2-4 meters, high, the branches glabrous or obscurely puberulent; stipules oval or broadly ovate, 1.5-2 cm. long or sometimes shorter, rounded at the apex, caducous; leaves rather thick, large, short-petiolate, darkening when dried, the blades obovate-oblong to oblong-elliptic, mostly 15-30 cm. long and 6-10 cm. wide, acute or acuminate, long-attenuate to the base, glabrous or minutely puberulent beneath on the veins; inflorescence short-pedunculate, cymose-paniculate, usually large and broad, lax and many-flowered, or dense at first, the branches minutely puberulent, the flowers sessile; calyx truncate or obsoletely denticulate; corolla greenish white, minutely puberulent outside, the tube 2 mm. long, not barbate in the throat; fruit red, subglobose, 4 mm. long.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith* 23022, 22907.—Junín: Colonia Perené, 600 meters, in forest, *Killip & Smith* 25100, 24936. Río Paucartambo Valley, 700 meters, *Killip & Smith* 25262. Chanchamayo, *Martinet*.—Loreto: Río Nanay, *Williams* 378. Caballo-cocha, in forest, *Williams* 2362, 2473. Tira Doble, *Williams* 1062. San Antonio, 110 meters, *Tessmann* 3571. Mishuyacu, *Klug* 783. San Martín: Moyobamba, *Mathews* 1491, type. Zepelacio, 1,200 meters, *Klug* 3344. Tarapoto, in forest, *Williams* 6057, 5964; *Spruce* 4203. Lamas, 840 meters, *Williams* 6409, 6343.—Without locality: *Martinet*. Also in Colombia. "Tapamaki."

***Psychotria pongoana* Standl., sp. nov.**

Frutex vel arbor 2-6-metralis, ramulis crassiusculis vel gracilibus obtuse quadrangularibus in sicco fuscis pilosis vel glabris, internodiis elongatis; stipulae persistentes 1-2.5 cm. longae fuscae glabratae profunde bilobae, lobis semiovatis vel semilanceolatis acutis vel acuminatis erectis; folia magna breviter petiolata papyracea in sicco fuscescentia, petiolo 1-3 cm. longo piloso vel glabro; lamina oblongo-elliptica vel obovato-oblonga 13-22 cm. longa 5.5-8.5 cm. lata abrupte breviacuminata, basi cuneatim attenuata, supra glabra, costa nervisque non elevatis, subtus ad costam nervosque breviter molliter pilosula, aliter glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere circa 11 obliquis arcuatis gracilibus prominentibus in marginem desinentibus, venulis inconspicuis laxe reticulatis; inflorescentia terminalis 5-15 cm. longe pedunculata

laxe bipinnatim paniculata pyramidalis, ramis oppositis gracilibus omnibus basi bracteatis divaricatis elongatis dense breviter pilosis, bracteis oblongis vel lanceolatis circa 1 cm. longis concavis obtusis vel acutis pilosulis, floribus in capitula dense multiflora circa 1 cm. diam. longe pedunculata dispositis, bracteis capitulorum ovalibus vel rotundatis 4–5 mm. longis apice rotundatis rigidis incurvis dense pilosulis vel glabratiss; hypanthium cum calyce campanulatum strigosum 3 mm. longum, limbo truncato; corolla alba extus densissime villosula 9 mm. longa, tubo prope basin tenui prope medium abrupte expanso, lobis reflexis lanceolato-ovatis acutis vix 2 mm. longis intus puberulis; antherae inclusae.

Loreto: Florida, Río Putumayo, at mouth of Río Zubineta, 180 meters, in forest, *Klug 2337* (herb. Field Mus. No. 668,884, type). Sierra del Pongo, 600 meters, in undergrowth in tall forest, *Mexia 6269a*.—Cuzco: Prov. Paucartambo, *Weberbauer 6938*.—Colombia: Comisaría del Putumayo, Umbría, 325 meters, in forest, *Klug 1812*.

***Psychotria microbotrys* Ruiz ex Standl.** Field Mus. Bot. 8: 204. 1930.

A shrub or tree 1–6 meters high, glabrous except in the inflorescence, with slender branches; stipules 14–17 mm. long, bifid, the segments lance-triangular, long-acuminate; leaves membranaceous, green when dried, the blades elliptic-oblong to broadly elliptic, 14–24 cm. long, 7–11 cm. wide, acute at each end; inflorescence long-pedunculate, broadly thyrsoid-paniculate, lax, many-flowered, 2–5 cm. long or larger, the branches spreading or broadly ascending or in age subreflexed, glabrous or sparsely and minutely puberulent, the flowers often subsecund, sessile or short-pedicellate; calyx lobes broadly rounded; corolla glabrous, white, 2.5 mm. long; fruit globose, 3 mm. long, acutely costate. Neg. 478.

Junín: Santa Rosa, 625–900 meters, dense forest, *Killip & Smith 26173*.—Loreto: La Victoria on the Amazon, in forest, *Williams 2983*, type. Santa Rosa, *Williams 4826*.—Without locality, *Ruiz*. Bolivia to Venezuela.

In the form of its inflorescence this species resembles closely some of the *Palicoureas*, but the corolla is that of a *Psychotria*.

***Psychotria moyobambana* Standl., sp. nov.**

Frutex metralis omnino glaber, ramulis gracilibus rigidis, vetustioribus nigrescentibus teretibus, internodiis 2–4 cm. longis; stipulae persistentes basi in vaginam fere 2 mm. longam crassam connatae,

vagina in lacinias 4 remotas lineares acutas desinente; folia parva breviter petiolata subcoriacea, petiolo crassiusculo vix ultra 2 mm. longo; lamina oblonga vel lanceolato-oblonga 3.5-5.5 cm. longa 1-2 cm. lata acuta vel acuminata, basi obtusa vel acuta, supra in sicco olivacea costa prominente pallida, nervis obsoletis, subtus multo pallidior flavescens, costa gracili elevata, nervis lateralibus utroque latere circa 7 angulo lato adscendentibus prominulis tenerrimis arcuatis marginem incrassatum cartilagineum attingentibus, venulis obsoletis; inflorescentia terminalis graciliter 2-3 cm. longe pedunculata, e capitulis 4-5 longe pedunculatis dense paucifloris circa 6 mm. latis racemose dispositis composita 1.5-2 cm. longa et aequilata, ramis basi nudis, bracteis capitula fulcrantibus 3-5 mm. longis anguste oblongis vel anguste spathulatis acutis vel obtusis ut videtur viridibus plus minusve recurvis, floribus arcte sessilibus; hypanthium cum calyce circa 1 mm. longum, calyce remote inaequaliter dentato; corolla 3 mm. longa extus glabra, tubo lato obconico, lobis late ovatis obtusis tubo paullo longioribus, corolla in alabastro apice rotundato-obtusa.

San Martín: Zepelacio, near Moyobamba, 1,200-1,600 meters, in mountain forest, *Klug 3394* (herb. Field Mus. No. 736,801, type).

***Psychotria nautensis* Standl.** Field Mus. Bot. 11: 242. 1936.

A tree 5.5 meters high, the branchlets glabrous; stipules persistent, suberect, 5-6 mm. long, glabrate, deeply bifid, the lobes semiovate, acute; leaves short-petiolate, subcoriaceous, narrowly oblanceolate-oblong, 18-28 cm. long, 6-7 cm. wide, long-acuminate or somewhat rounded and abruptly short-acuminate, long-attenuate to the base, glabrous, with about 13 pairs of nerves; inflorescence almost sessile, terminal, cymose-paniculate, laxly and diffusely branched, 15-20 cm. long and broad, the slender branches bracteate at the base, spreading or reflexed, densely and minutely pilose, the bracts 3-5 mm. long, lanceolate or oblong; flowers in few-flowered, small, bracted heads, the obtuse bracts 2-3 mm. long; hypanthium and calyx minutely pilose; corolla white, in bud 6-7 mm. long, very densely villosulous.

Loreto: Nauta, near the mouth of Río Ucayali, in forest, *Spruce 3863*, type.

***Psychotria nigricans* Standl.** Field Mus. Bot. 8: 205. 1930.

A shrub or small tree, the branchlets densely puberulent; stipules bifid, the lobes triangular-lanceolate, attenuate; leaves short-petiolate, blackish when dried, membranaceous, the blades lanceolate to

elliptic-oblong, 12-24 cm. long, 4-9 cm. wide, long-acuminate, narrowed to the acute base, puberulent or short-pilosulous beneath on the veins; inflorescence pedunculate, very dense and many-flowered, about 2 cm. long and broad, composed of 5-9 dense, head-like cymes, the branches densely puberulent or pilosulous, the bracts foliaceous, lanceolate or linear-lanceolate, 5-8 mm. long; bractlets villous-ciliate; calyx 5-dentate; fruit ellipsoid, puberulent, 7-8 mm. long.

Loreto: Pebas, on the Amazon, in forest, *Williams 1603* (type), 1569, 1777, 1621, 1570. "Sonia."

Perhaps a *Palicourea* rather than a *Psychotria*.

Psychotria nudiceps Standl. Field Mus. Bot. 8: 378. 1931.

A shrub 1 meter high, almost wholly glabrous; stipules connate into a short-mucronate or subtruncate sheath; leaves short-petiolate, membranaceous, olivaceous when dried, the blades oblong or elliptic-oblong, 9-20 cm. long, 3-6.5 cm. wide, abruptly short-acuminate, narrowed to the base or abruptly contracted and decurrent; inflorescences terminal, sessile or pedunculate, capitate, the heads 1 cm. wide, densely many-flowered, the bracts none or minute; calyx 1 mm. long, truncate; corolla yellow, glabrous, acutish in bud, the tube 2.5 mm. long, barbate in the throat, the lobes slightly shorter.

Loreto: Punchana, in forest, *Williams 3775*. Mishuyacu, 100 meters, in forest, *Klug 278, 306*.—San Martín: Tarapoto, *Williams 6600*, type.

Psychotria opima Standl. Field Mus. Bot. 11: 243, 1936.

A shrub a meter high, the branches glabrous; stipules persistent, connate into a very short sheath, with 4 setiform segments 7 mm. long; leaves short-petiolate, membranaceous, oblong-elliptic or broadly elliptic, 16-25 cm. long, 8-12 cm. wide, long-acuminate, obtuse at the base or rounded and abruptly contracted and short-decurrent, glabrous, with about 12 pairs of lateral nerves; inflorescence terminal, paniculate, 10 cm. long and 7 cm. wide, laxly many-flowered, trichotomous at the base, the slender branches densely puberulent, the flowers sessile in small cymes, the bracts minute; hypanthium and calyx together 1 mm. long, sparsely puberulent, the limb obscurely repand-denticulate; corolla yellowish, puberulent, minutely 5-corniculate at the apex, the tube 4 mm. long, not barbate in the throat, the 5 lobes oblong, glabrate within, half as long as the tube; anthers long-exserted.

Loreto: Lower Río Napo, in inundated forest, 100 meters, *Tessmann* 3710, type.

Psychotria patens Sw. Prodr. 45. 1788. *P. flexuosa* Willd. Sp. Pl. 1: 966. 1798.

A slender, glabrous shrub about 1 meter high, or reported also as a small tree; stipules short, green, biaristate; leaves small or medium-sized, usually yellowish green when dried, subcoriaceous, the blades lanceolate to lance-oblong, long-acuminate, obtuse or acute at the base; inflorescence pedunculate, thyrsoid-paniculate, often elongate, the short, slender branches reflexed; calyx lobes triangular; corolla whitish, glabrous, 7 mm. long; fruit white or pale blue, 3 mm. long. Neg. 549.

Junín: La Merced, 1,200 meters, in forest, 5605; *Killip & Smith* 23829. Above San Ramón, 1,400–1,700 meters, *Killip & Smith* 24694, 24623; *Schunke* A22. Colonia Perené, 680 meters, *Killip & Smith* 24932. Florida, 180 meters, dense forest, *Klug* 2282. Chanchamayo Valley, 1,000 meters, *Schunke* 65.—Loreto: Iquitos, in forest, *Williams* 3680, 3681; *Tessmann* 3638. Alto Río Itaya, *Williams* 3259. Mouth of Río Santiago, *Tessmann* 4509.—San Martín: Tarapoto, *Williams* 5612, 5886, 6728. Zepelacio, 1,200 meters, *Klug* 3331. Lamas, *Mathews* 1488. Widely distributed in tropical America, usually in the lowland forests. "Gidoro-ey" (Huitoto name).

Psychotria pichisensis Standl. Field Mus. Bot. 8: 205. 1930.

A shrub or tree 7.5 meters high or less with glabrous branchlets; stipules oblong, acute, 6 mm. long, caducous; leaves short-petiolate, darkening when dried, the blades chartaceous, elliptic-oblong or oblanceolate-oblong, 12–17 cm. long, 4–5.5 cm. wide, acuminate, long-attenuate to the base, glabrous, with 11–13 pairs of nerves; inflorescence long-pedunculate, broadly pyramidal-paniculate, 10–17 cm. broad, the branches spreading or subreflexed, sparsely and minutely pilosulous or glabrate, the pedicels 2–4 mm. long; calyx truncate or remotely denticulate; fruit subglobose, 5 mm. long.

Junín: San Nicolás, 1,100 meters, dense forest, *Killip & Smith* 25993, type. Between Azupizú and Santa Rosa, 650 meters, *Killip & Smith* 26138.—Loreto: Mouth of Río Santiago, 160 meters, *Tessmann* 4521. Iquitos, 100 meters, *Tessmann* 3558.

Psychotria pilosa R. & P. Fl. 2: 60. pl. 208, f. a. 1799.

A shrub 3.5 meters high or less, or sometimes low and only suffrutescent, copiously pilose or hirsute throughout; stipules large,

persistent, bifid, the broad lobes acute or acuminate; leaves medium-sized, thin, dull green when dried, petiolate, the blades oblong-elliptic or ovate-oblong, acuminate, acute to obtuse at the base; inflorescence long-pedunculate, paniculate, at first dense or in age open, the flowers white, congested and subtended by conspicuous bluish bracts, the branches spreading or subreflexed; calyx acutely 5-dentate; fruit small, blue, pilose. Neg. 477.

Huánuco: Type from Cochero, *Ruiz & Pavón* (photo. seen, ex hb. Berol.). Cochero, *Poeppig* 1446.—Junín: Río Paucartambo Valley, 700 meters, dense forest, *Killip & Smith* 25303, 25295. Near La Merced, 800–1,300 meters, *Killip & Smith* 23873. Yapas, 1,400 meters, *Killip & Smith* 25569. Colonia Perené, 680 meters, *Killip & Smith* 24934. San Nicolás, 110 meters, *Killip & Smith* 25995.—Loreto: Pampas de Ponasa, *Ule* 6775.—San Martín: Zepelacio, 1,200–1,600 meters, mountain forest, *Klug* 3445. Río Mayo, near Tarapoto, *Spruce* 4433. Bolivia.

***Psychotria pluriceps* Standl.** Field Mus. Bot. 11: 246. 1936.

A glabrous shrub; stipules persistent, connate into a sheath 1 mm. long, the 4 lobes narrowly triangular-oblong, acute; leaves short-petiolate, membranaceous, ovate-oblong or elliptic-oblong, 15–23 cm. long, 6–8.5 cm. wide, abruptly caudate-acuminate, acute at the base or abruptly contracted and cuneate-decurrent, the lateral nerves about 14 pairs; inflorescence terminal, small, short-pedunculate, capitate-paniculate, 2 cm. long and 3 cm. wide, with few spreading or subreflexed branches, the heads few-flowered, usually pedunculate, 4–6 mm. broad, the bracts green, spreading, oblong-triangular, acuminate; calyx 0.8 mm. long, truncate and remotely denticulate; corolla glabrous outside, 2.5 mm. long, the throat densely white-barbate.

Loreto: San Ramón, Yurimaguas, 200 meters, in forest, *Williams* 4573, type. Tira Doble, Alto Río Nanay, *Williams* 1078, 1064. "Mullaca."

***Psychotria racemifera* Standl.** Field Mus. Bot. 8: 71. 1930.

A low, sometimes decumbent, glabrous shrub; stipules connate into a truncate sheath 2 mm. long, the subulate lobes 2–3 mm. long; leaves yellowish green when dried, coriaceous, short-petiolate, the blades elliptic-oblong or narrowly elliptic, 6–10 cm. long, 2–4 cm. wide, acuminate, acute or obtuse at the base, conspicuously margined, inflorescence pedunculate, the sessile flowers capitate-congested, the heads racemose, the rachis minutely puberulent; outer bracts

oblong or linear, 2-5 mm. long, green; calyx shallowly dentate; corolla white, glabrous, 2.5-3 mm. long; fruit globose, 4-5 mm. long, reticulate-veined.

Loreto: Timbuchi, Río Nanay, in forest, *Williams* 952. Brazil, Venezuela, and Colombia.

Psychotria racemosa (Aubl.) Willd. Sp. Pl. 1: 966. 1797. *Nonatelia racemosa* Aubl. Pl. Guian. 1: 187. pl. 72. 1775.

A shrub 1-1.5 meters high with puberulent branches; stipules biparted, persistent, with stiff, subulate lobes 8-10 mm. long; leaves green when dried, short-petiolate, firm-membranaceous, the blades chiefly oblong-elliptic, medium-sized, short-acuminate, acute or abruptly contracted at the base, glabrous or nearly so; inflorescence short-pedunculate, thyriform, small and dense, minutely hirtellous, the flowers sessile; calyx lobes linear-lanceolate; corolla hirtellous; fruit 4-5-celled, 4 mm. long, at first orange-red, becoming black.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith* 22893.—Junín: Cahuapanas, 340 meters, *Killip & Smith* 26721. Santa Rosa, *Killip & Smith* 26181. Colonia Perené, 680 meters, *Killip & Smith* 24927. Near La Merced, *Killip & Smith* 23865. Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26496. Río Paucartambo Valley, 700 meters, *Killip & Smith* 25339.—Loreto: Caballo-cocha, *Williams* 2044, 2365. Pebas, *Williams* 1672, 1727, 1697, 1938. La Victoria, *Williams* 3085. Yurimaguas, *Williams* 3850; *Killip & Smith* 29047; *Poeppig* in 1831. Fortaleza, *Williams* 4255, 4353. Paraíso, *Williams* 3257. San Antonio, *Williams* 3440; *Killip & Smith* 29468. Masana, *Williams* 8169. Río Acre, *Ule* 9845.—San Martín: Tarapoto, *Spruce* 4543. Widely distributed in tropical America.

A common species of wet lowland forests in many parts of tropical America. Easy to recognize by its normally 5-celled fruit.

Psychotria repanda R. & P. Fl. 2: 61. 1799.

A glabrous shrub; stipules connate at the base, lanceolate, ciliate on the margin and costa, caducous; leaves petiolate, the blades lanceolate or oblong-lanceolate, repand; flowers sessile, paniculate-racemose, the racemes elongate, the branches compressed, subtended by small, ovate, acute bracts; calyx minute, 5-dentate; corolla minute, yellow, villous in the throat; fruit purple, as large as a peppercorn.

Huánuco: Described from Cochoero and Chinchao, *Ruiz & Pavón*.

Known to the writer only from the original description, which is not accompanied by a plate. This species is not included in the key. The description suggests a plant of the alliance of *Psychotria patens*, but this is a mere guess.

Psychotria reticulata R. & P. Fl. 2: 56. *pl.* 212, *f. b.* 1799.
Rudgea valida Rusby, Mem. Torrey Club 6: 51. 1896.

A shrub, the stout branchlets with a short, dense, velvety pubescence; stipule lobes 1 cm. long, linear; leaves large or medium-sized, yellowish when dried, subcoriaceous, short-petiolate, the blades oblong-ovate to oblong-elliptic, abruptly acuminate, obtuse at the base, rough above, densely velvety-pubescent beneath; inflorescence pedunculate, pyramidal, cymose-paniculate, the primary branches subtended by long, narrow bracts, the flowers sessile in very dense cymes; calyx teeth ovate, acute; corolla 6 mm. long, yellow, pilose.

Amazonas: Yambrasbamba, *Mathews* 1494.—Huánuco: Type from Pillao, *Ruiz & Pavón* (photo. seen, ex hb. Berol.). Bolivia.

Psychotria retifera Standl. Field Mus. Bot. 4: 342. 1929.

Branchlets tomentulose; stipules connate, 2-3 mm. long, very shortly bilobate, the lobes rounded; leaves short-petiolate, dark when dried, thick-coriaceous, the blades elliptic or broadly elliptic, 3-5.5 cm. long, 1.7-3 cm. wide, acute, rounded or obtuse at the base, glabrous, with closely reticulate, prominent venation; inflorescence pedunculate, thyrsoïd-paniculate, 1-3 cm. long, dense, many-flowered, the branches densely puberulent, the flowers sessile or subsessile; calyx subtruncate, tomentulose; corolla 5 mm. long, tomentulose; fruit subglobose, 8 mm. long.

Huánuco: Between Huánuco and Pampayacu, *Kanehira* 247, type.

The plant may be a *Palicourea* rather than a *Psychotria*, since it has been impossible to determine satisfactorily the floral details.

Psychotria rhodophylla Standl. Field Mus. Bot. 8: 194. 1930.

A shrub 1-4.5 meters high, the branchlets glabrous or minutely pilosulous; stipule sheath 1-2.5 mm. long, the lobes linear-subulate, 2.5-5 mm. long; leaves short-petiolate or almost sessile, bright green when dried, often reddish beneath, at least on the veins, the blades elliptic-oblong to elliptic, 11-30 cm. long, 5-15 cm. wide, acute or short-acuminate, acute to obtuse at the base, glabrous or nearly so; inflorescence head-like, short-pedunculate, 4.5-5 cm. broad or in fruit broader, the primary branches fastigiate, puberulent, the

outer bracts 13–20 mm. long, red-nerved, puberulent or glabrate; calyx subtruncate; corolla blue, glabrous, the tube 12 mm. long, not barbate in the throat; fruit deep purple, depressed-globose, 6 mm. long, smooth.

Loreto: Mishuyacu, near Iquitos, 100 meters, in forest, *Klug* 289 (type), 370. Fortaleza, Yurimaguas, 200 meters, in forest, *Williams* 4354, 4120, 4258, 3880; *Poeppig* 2083. Mainas, *Poeppig* 1083B, 2083B. San Antonio, 110 meters, *Killip & Smith* 29441. Between Yurimaguas and Balsapuerto, *Killip & Smith* 28084. Paraíso, *Williams* 3258.—San Martín: Tarapoto, *Williams* 6589. Pongo de Cainarachi, 230 meters, in forest, *Klug* 2646.

***Psychotria rhodothamna* Standl.** Field Mus. Bot. 8: 201. 1930.

A shrub or small tree, 1–6 meters, high, glabrous except in the inflorescence; stipules 2–3 mm. long, appressed, the short lobes ovate-triangular, obtuse; leaves green when dried, short-petiolate, the blades thick-membranaceous, lance-oblong to oblong-elliptic, 9–19 cm. long, 3–8 cm. wide, cuspidate-acuminate, acute or short-acuminate at the base, the lateral nerves about 8 pairs; inflorescence pedunculate, depressed-cymose, 1.5–3 cm. broad, dense, many-flowered, the branches ebracteate at base, puberulent or glabrous, reddish when dried, the flowers sessile or short-pedicellate; calyx truncate or obsoletely denticulate; corolla white or ochroleucous, pulverulent or glabrate, the tube 8–14 mm. long, the obtuse lobes 2.5–3 mm. long; fruit apparently blue, didymous, 5–6 mm. broad, smooth.

Loreto: Iquitos, 100 meters, in woods, *Killip & Smith* 27115 (type), 26925, 27344. Pisco, in forest, *Williams* 1286. Pebas, on the Amazon, *Williams* 1591, 1664, 1678. Yurimaguas, edge of forest, *Williams* 3906. San Antonio, Alto Itaya, *Williams* 3491; *Killip & Smith* 29334, 29341. Mishuyacu, 100 meters, *Klug* 741. Bolivia to Venezuela.

Psychotria rufescens H. & B. (*P. micrantha* HBK.). The original locality of *P. micrantha* is given doubtfully as Peru, but that of *P. rufescens*, which probably was based upon the same collection, is reported as the Río Magdalena in Colombia. The species, apparently, should be excluded from any list of the Peruvian flora.

Psychotria rugulosa HBK. The locality of this species, likewise, was given originally as perhaps Peruvian, but the plant seems to be rather a species of Ecuador and Colombia.

Psychotria Ruizii Standl. Field Mus. Bot. 7: 313. 1931.

A nearly glabrous shrub 2 meters high; stipules bifid almost to the base, the lobes rigid, linear-attenuate; leaves short-petiolate, bright green when dried, firm-membranaceous, the blades oblong-ovate to elliptic, 10–19 cm. long, 4–8 cm. wide, acute or acuminate, at the base contracted and decurrent, the lateral nerves about 7 pairs; inflorescence pedunculate, head-like, 1–2 cm. broad, erect or sub-recurved, the peduncle puberulent, pilosulous, or glabrate; outer bracts green, rounded, 6 mm. long; calyx deeply lobate, the segments triangular-subulate; corolla white; fruit glabrous, subglobose, 3.5 mm. long. Neg. 472.

Huánuco: Chicoplaya, *Ruiz*.—Loreto: Fortaleza, 140 meters, in forest, *Klug* 2826. Bolivia.

Psychotria santaremica Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 328. 1881.

A slender shrub 1 4.5 meters high, glabrous or almost so, sometimes obscurely puberulent on the leaf veins; stipules short, the lobes subulate; leaves medium-sized, short-petiolate, green when dried, the blades ovate to lanceolate or elliptic-oblong, long-acuminate, abruptly contracted and decurrent at the base, with 8–11 pairs of nerves; inflorescence short-pedunculate, umbellately few-rayed, the branches naked at the base, the flowers in head-like clusters, sometimes all congested into a single head; basal bracts linear and greatly elongate; calyx 5-dentate; branches of the inflorescence pink; corolla ochroleucous or yellow; fruit globose, 4 mm. long, white or pale blue (reported also as purple). Neg. 6103.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith* 22873.—Junín: Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26413. Puerto Yessup, 400 meters, *Killip & Smith* 26251, 26283.—Loreto: Iquitos, 100 meters, *Killip & Smith* 29853. Masisea, 275 meters, open woods, *Killip & Smith* 26847. Río Napo near Mazán, *Mexia* 6451. Yurimaguas, 135 meters, *Killip & Smith* 28022. Santa Rosa, *Killip & Smith* 28766. Peña Blanca, *Killip & Smith* 29649.—San Martín: Juan Jui, *Klug* 3909. Pongo de Cainarachi, *Klug* 2741. San Roque, in forest, *Williams* 6937, 7408, 7700. Also in Amazonian Brazil and in Colombia. "Mullaca."

Psychotria semimetralis Krause, Notizbl. Bot. Gart. Berlin 8: 102. 1922.

An epiphytic shrub about 50 cm. high, glabrous; stipules connate into a sheath 2–2.5 mm. long, dentate at the apex; leaves short-

petiolate, coriaceous, the blades lanceolate or lance-oblong, 3.5–5.5 cm. long, 1.2–1.8 cm. wide, acute or acuminate, narrowed at the base; inflorescence pedunculate, small, few-flowered, about equaling the leaves, the flowers short-pedicellate; calyx lobes ovate-lanceolate, acute; corolla pale yellow, the tube 5–6 mm. long, the lobes scarcely half as long. Neg. 470.

San Martín: Mountains east of Moyobamba, 1,500 meters, *Weberbauer* 4751, type (photo. and fragm. seen, ex hb. Berol.). Cerro de Campana, *Spruce*.

The Spruce collection was referred by the writer to *Psychotria lassula* Standl., but there seems to be no reason for segregating it from the Krause species, and *P. lassula*, as pertains to the type specimen, likewise may not be separable. Both species belong to a small group of epiphytic plants, whose forms are closely related, and it remains to be seen how many of the proposed species can be maintained when ample material is available for consideration.

Psychotria stenostachya Standl. Field Mus. Bot. 8: 207. 1930.

A shrub or tree 1–7.5 meters high, the branchlets appressed-pilosulous or glabrate; stipule sheath 4–6 mm. long, the linear-subulate lobes 5–9 mm. long; leaves usually dark when dried, short-petiolate, thick-membranaceous, the blades elliptic, oblong-elliptic, or obovate-elliptic, mostly 14–25 cm. long and 5–12 cm. wide, abruptly acuminate, acute or abruptly acute at the base or sometimes attenuate, puberulent or appressed-pilosulous beneath along the veins or glabrate; inflorescence pedunculate, 4–10.5 cm. long, 8–15 mm. wide, composed of numerous sessile or short-pedunculate cymes, these few- or many-flowered, the branches ferruginous-tomentose, the bracts inconspicuous; calyx truncate or unequally dentate; corolla greenish white, tomentulose or glabrate, 5-tuberculate at the apex in bud, the tube 5 mm. long, not barbate in the throat; fruit orange, subglobose, 6 mm. long, 5-celled.

Junín: Near Puerto Yessup, 400 meters, dense forest, *Killip & Smith* 26220.—Loreto: San Antonio, 110 meters, dense forest, *Killip & Smith* 29294 (type), 29346, 28413, 29419. Puerto Arturo, *Williams* 5078, 5293. Fortaleza, edge of forest, *Williams* 4307, 4251. Recreo, *Williams* 4135. Yurimaguas, *Williams* 3890. Paraíso, *Williams* 3329, 3238. Pebas, *Williams* 1606. Foothills of Sierra del Pongo, 400 meters, *Mexia* 6186. Balsapuerto, *Killip & Smith* 28516. Santa Rosa, *Killip & Smith* 28755. Soledad, *Killip & Smith* 29574, 29767. Between Yurimaguas and Balsapuerto, 140 meters,

Killip & Smith 28160.—San Martín: Río Mayo, *Spruce 4383*. Tarapoto, in forest, *Williams 6095*. Pongo de Cainarachi, 230 meters, in forest, *Klug 2697*. Ecuador.

A member of the subgenus *Nonatelia*, and related, therefore, to *P. racemosa*.

***Psychotria striolata* Krause**, Notizbl. Bot. Gart. Berlin 6: 209. 1914.

A nearly glabrous shrub 1–3 meters high; stipules broadly ovate, acuminate, 10–12 mm. long, caducous; leaves short-petiolate, the blades membranaceous, oblong to ovate-oblong, 12–18 cm. long, 5–7 cm. wide, with 17–20 pairs of nerves, acuminate, attenuate at the base; inflorescence small and rather few-flowered, short-pedunculate; calyx minutely denticulate; corolla white or greenish, 2.5 mm. long, the lobes shorter than the tube. Neg. 460.

Loreto: San Francisco on the Río Acre, *Ule 9844*, type (photo. seen, ex hb. Berol.).

***Psychotria subtomentosa* R. & P.** Fl. 2: 61. pl. 210, f. a. 1799. *Cephaelis subtomentosa* Spreng. Syst. Veg. 1: 749. 1825.

A shrub or small tree with stout, hirsute branches; stipules large, bifid, with elongate, linear lobes; leaves subcoriaceous, yellowish green or sometimes darkening when dried, petiolate, the blades lance-oblong or elliptic-oblong, medium-sized, long-acuminate, acute at the base, copiously pilose; inflorescence sessile or pedunculate, trifid, the flowers sessile in large, dense, head-like clusters; calyx 5-dentate; corolla blue, villous.

Huánuco: Described from Chinchao, Mesapata, and Maichainigo, *Ruiz & Pavón*.—Junín: Chanchamayo Valley, *Schunke 298, 397*.

***Psychotria tarapotensis* Standl.** Field Mus. Bot. 8: 377. 1931.

A slender, nearly glabrous shrub; stipules biparted, the segments linear, green; leaves sessile, firm-membranaceous, green when dried, elliptic or elliptic-oblong, 6.5–12 cm. long, 2.5–5.5 cm. wide, abruptly acuminate, acute at the base; inflorescence slender-pedunculate, capitate, the peduncle glabrous or hispidulous, the head densely few-flowered, or composed of 4 heads, the outer bracts apparently green, 10–14 mm. long, lanceolate; calyx remotely denticulate; corolla hispidulous, the tube 5 mm. long.

San Martín: Tarapoto, 750 meters, *Williams 5888* (type), 5867, 6497.

Psychotria tenuicaulis Krause, Notizbl. Bot. Gart. Berlin 8: 101. 1922.

A slender shrub or small tree 1-6 meters high, the young branches pilose; stipules ovate-lanceolate, 3-4 mm. long, acute, deciduous; leaves short-petiolate, thin, lanceolate or oblong-lanceolate, mostly 5-9 cm. long and 2-3 cm. wide, acuminate, acute or obtuse at the base, sparsely pilose beneath, at least along the costa; inflorescence slender-pedunculate, lax, few-flowered, 3-5 cm. long, trichotomous or verticillately branched at the base, the flowers slender-pedicellate; calyx acutely denticulate; corolla white or ochroleucous, 3-3.5 mm. long; fruit small, deep red. Neg. 471.

Huánuco: Between Monzón and the Huallaga, 600 meters, *Weberbauer 3663*, type (photo. and fragm. seen, ex hb. Berol.). Cochero, dense forest, *Poeppig 1067*.—Junín: Cahuapanas, 340 meters, *Killip & Smith 26719*. San Nicolás, 1,100 meters, dense forest, *Killip & Smith 25999*.—Loreto: Mainas, *Poeppig 2445B*. Puerto Arturo, 160 meters, in forest, *Williams 5292, 5217*; *Killip & Smith 27735*. Fortaleza, Yurimaguas, edge of forest, *Williams 4283, 4438*. Río Itaya, *Williams 232*. Santa Rosa, 135 meters, *Killip & Smith 28887*. Also in Colombia.

Psychotria Tessmannii Standl. Field Mus. Bot. 4: 341. 1929.

A rather slender shrub 1-3.5 meters high, with glabrous branchlets; stipule lobes subulate, 6-8 mm. long or more; leaves usually blackening when dried, rather thin, short-petiolate, the blades elliptic to elliptic-oblong, chiefly 7-20 cm. long and 3-8 cm. wide, long-acuminate, acute at the base or abruptly contracted and decurrent, sparsely and minutely puberulent beneath on the veins; inflorescence pedunculate, narrowly paniculate, elongate, raceme-like, the sessile flowers in small, pedunculate cymes, the branches minutely puberulent; calyx obsoletely obtuse-dentate; corolla white or ochroleucous, minutely puberulent or glabrate, the tube 2.5 mm. long; fruit bright orange.

Junín: San Nicolás, 1,100 meters, dense forest, *Killip & Smith 25994*.—Loreto: Río Ucayali, *Tessmann 3014*, type. Río Masana, in forest, *Williams 205*. Santa Rosa, 135 meters, *Killip & Smith 28777*. Río Putumayo, in forest, *Klug 1625*. Florida, 200 meters, in forest, *Klug 1975*. San Antonio, 110 meters, *Killip & Smith 29321*. Mouth of Río Tigre, wooded bank, *Killip & Smith 27521*. Iquitos, *Killip & Smith 27186, 27460*. Río Itaya, *Killip & Smith*

29287. Peña Blanca, *Killip & Smith 29657*.—San Martín: Base of Cerro Campana, *Spruce 4383*. Ecuador.

Psychotria tinctoria R. & P. Fl. 2: 62. *pl. 211, f. a.* 1799.
Palicourea tinctoria R. & S. Syst. Veg. 5: 194. 1819.

An almost glabrous shrub or small tree 3-6 meters high, with stout branches; stipules large, persistent, deeply bilobate, the broad lobes obtuse; leaves subcoriaceous, petiolate, yellowish green when dried, the blades broadly elliptic to elliptic-oblong, large, obtuse or acute, acute to almost rounded at the base; inflorescence paniculate, pedunculate, rounded-pyramidal, rather small, subappressed-pilose, the stout branches spreading, chiefly opposite, subtended at the base by large bracts; calyx 5-dentate; corolla sericeous, hirsute in the throat, reddish yellow, or yellowish white with deeper yellow lobes; fruit large, subglobose, reddish. Neg. 649.

Huánuco: Described from Macora and Mesapata, *Ruiz & Pavón* (photo. of authentic specimen seen, ex hb. Berol.).—Junín: Yapas, 1,400 meters, dense forest, *Killip & Smith 25492*. Eneñas, 1,700 meters, dense forest, *Killip & Smith 25640*.—Without locality: *Fielding*.

Psychotria trifida R. & P. Fl. 2: 60. *pl. 209, f. b.* 1799.

A nearly glabrous shrub; stipules bifid, small, with short, acute lobes, persistent; leaves thick, shining above, short-petiolate, darkening when dried, the blades oblong or oblong-oblong, small, acuminate, acute at the base, pilose beneath along the costa; inflorescence terminal, trichotomous, sessile, the flowers in small, dense, head-like clusters; calyx 5-dentate; corolla sparsely pubescent, hirsute in the throat; fruit black. Neg. 486.

Huánuco: Type collected between Acomayo and Cerro Carpish, *Ruiz & Pavón* (photo. and fragm. seen, ex hb. Berol.). Cocho, *Poeppig 1527*.

Psychotria Victoriae Standl. Field Mus. Bot. 8: 191. 1930.

A shrub or tree 6 meters high or less, the branches puberulent or glabrous; stipules 5-8 mm. long, short-bilobate, the lobes obtuse or rounded; leaves petiolate, firm, green or rather dark when dried, the blades oblong or elliptic-oblong, 14-20 cm. long, 5-8.5 cm. wide, abruptly short-acuminate, narrowed to the base, glabrous beneath or pilosulous on the veins, the nerves about 13 pairs; inflorescence long-pedunculate, composed of 4-7 racemose heads, the peduncles spreading, glabrous or short-pilose, bracteate at the base, the dense

heads 1-2 cm. in diameter; outer bracts broadly rounded, ciliate, deep purple; calyx appressed-pilose, 2-4 mm. long, truncate; fruit apparently blue, 4-5 mm. long, pilose about the apex.

Junín: San Nicolás, 1,100 meters, dense forest, *Killip & Smith 26013*. Puerto Yessup, 400 meters, dense forest, *Killip & Smith 26255*.—Loreto: La Victoria, on the Amazon, in forest, *Williams 3080*, type. Iquitos, *Williams 8228*.

***Psychotria villosa* R. & P. Fl. 2: 59. pl. 207, f. a. 1799.**

A shrub about 2 meters high, the branches ferruginous-villous or hirsute; stipules ovate, acute, caducous; leaves petiolate, oblanceolate-oblong, sometimes 25 cm. long but usually much smaller, acuminate, attenuate to the base, rusty-villous or hirsute, especially beneath; inflorescence pedunculate, corymbose-paniculate, lax and open, the basal branches opposite or verticillate; calyx 5-dentate; corolla 3 mm. long, glabrous outside; fruit red, glabrous, 4 mm. long. Neg. 485.

Huánuco: Described from Chinchao and Cochero, *Ruiz & Pavón*. Posuso, 600 meters, in forest, 4709. Pampayacu, *Kanehira 23*. Casapí, *Fielding 1947*. Cochero, *Fielding 1948*.—Ayacucho: Aina, 750-1,000 meters, open woods, *Killip & Smith 22524, 23136*.—San Martín: San Roque, 1,400 meters, *Williams 7520, 7336*. Río Mayo, *Spruce 4372*.—Without locality: *Poeppig 1568*.

***Psychotria virgata* R. & P. Fl. 2: 60. pl. 209, f. a. 1799.**

A glabrous shrub with stout branches; stipules short, persistent, bilobate, with rounded lobes; leaves small, coriaceous, short-petiolate, lance-oblong to elliptic, acute or short-acuminate, acute or subobtuse at the base, conspicuously veined; inflorescence cymose-paniculate, sessile or pedunculate, puberulent or glabrate, the flowers sessile or nearly so; bracts small and inconspicuous; calyx 5-dentate; corolla yellow, hirsute in the throat; fruit oval, dark blue. Neg. 484.

Huánuco: Described from Sircai and Soria, near Pillao and Muña, *Ruiz & Pavón* (photo. and fragm. seen, ex hb. Berol.).—San Martín: Chiliquín, *Mathews 1493*.

Ruiz and Pavón state that the dried leaves were employed for dyeing yellow. The species should probably be referred rather to the genus *Palicourea*.

***Psychotria viridis* R. & P. Fl. 2: 61. pl. 210, f. b. 1799. *P. glomerata* HBK. Nov. Gen. & Sp. 3: 362. 1820. *Palicourea viridis* R. & S. Syst. Veg. 5: 195. 1819.**

A shrub or small tree, 4.5 meters high or less, glabrous or nearly so; stipules large, thin, acuminate, ferruginous, caducous; leaves darkening when dried, thin, short-petiolate, obovate or obovate-oblong, small or medium-sized, acute or short-acuminate, cuneate-attenuate to the base; inflorescence pedunculate, spicate-paniculate, open, many-flowered, the minute flowers sessile in distant glomerules; corolla greenish white; fruit red, 4–5 mm. long. Neg. 482.

Huánuco: Described from Chinchao and Macora, *Ruiz & Pavón*.—Junín: Colonia Perené, 600 meters, in forest, *Killip & Smith 25150*. Puerto Bermúdez, 375 meters, *Killip & Smith 26641*.—Loreto: San Ramón, in forest, *Williams 4567*. Fortaleza, Yurimaguas, *Williams 4276*. Paraíso, *Williams 3363*. Balsapuerto, *Killip & Smith 28383*. Santa Rosa, *Williams 4836*. Puerto Arturo, 135 meters, *Killip & Smith 27763, 27871*. Between Yurimaguas and Balsapuerto, *Killip & Smith 28264*.—San Martín: Tarapoto, *Williams 6699, 6030; Ule 6614*. Casapí, *Fielding 1949*. Zepelacio, 1,200 meters, in forest, *Klug 3377*. Rumizapa, *Williams 6812*. Río Mayo, *Williams 6278, 6228, 6203*. Bolivia to Central America and Cuba: Amazonian Brazil.

"Paufil chaqui." The original locality of *P. glomerata* was given doubtfully as Peru, but it is more probable that the type came from Colombia.

***Psychotria Weberbaueri* Standl. Field Mus. Bot. 8: 192. 1930.**

A tree 8 meters high, glabrous or nearly so; stipules caducous, triangular, obtuse, 3 mm. long; leaves petiolate, rather thick, darkening when dried, the blades broadly elliptic or ovate-elliptic, 13–25 cm. long, 6.5–16 cm. wide, acute or abruptly apiculate-acuminate, at the base obtuse to subtruncate and abruptly long-decurrent, with about 25 pairs of nerves; inflorescence terminal or pseudo-axillary, cymose-paniculate, broadly pyramidal, lax, many-flowered, 11 cm. broad, verticillate-branched at the base, the branches glabrous; pedicels 1–3 mm. long; calyx truncate; corolla greenish white, 5 mm. long, glabrous.

Junín: La Merced, 1,000 meters, *Weberbauer 1872*, type.

***Psychotria Williamsii* Standl. Field Mus. Bot. 8: 200. 1930.**

A shrub 2–2.5 meters high, nearly glabrous; stipules short-conate, the lobes 4–5 mm. long, subulate-linear; leaves sessile, firm, green when dried, narrowly oblong or lance-oblong, 13–22 cm. long, 3–6 cm. wide, very long-acuminate, rounded and shallowly cordate at the base; inflorescence long-pedunculate, depressed-cymose,

almost head-like, 5 cm. broad, the very short branches naked at the base, minutely puberulent or glabrous; bracts deep purple, elliptic-oblong to lanceolate or oblanceolate, 1.5–2.5 cm. long, acute to cuspidate-acuminate, puberulent or glabrate; calyx with very short, rounded lobes; corolla pale blue, minutely puberulent, 8 mm. long; fruit 5 mm. long.

Loreto: Río Nanay, in forest, *Williams* 760 (type), 763. Peña Blanca on Río Itaya, 110 meters, dense forest, *Killip & Smith* 29648. "Brocha sisa."

Psychotria yapasensis Standl. Field Mus. Bot. 8: 196. 1930.

A glabrous shrub or tree 2.5–6 meters high; stipule sheath 1.5–3 mm. long, truncate, the lobes triangular, acute, 1–2 mm. long; leaves short-petiolate, coriaceous or thinner, the blades elliptic-ovate or oblong-elliptic, 9–24 cm. long, 4–10 cm. wide, obtuse or acute, at the base acute or subobtuse; inflorescence long-pedunculate, broadly pyramidal-paniculate, lax, many-flowered, the opposite branches bracted at the base, spreading or subreflexed, the flowers sessile; calyx truncate or minutely denticulate; corolla yellowish, glabrous, 7 mm. long.

Junín: Yapas, 1,350–1,600 meters, dense forest, *Killip & Smith* 25461 (type), 25567.

Psychotria zepelaciana, Standl., sp. nov.

Frutex 3-metralis, ramulis crassiusculis densissime pilis brevibus patentibus ferrugineis pilosis, internodiis brevibus; stipulae caducae non visae; folia magna petiolata crasse membranacea in sicco fuscescentia, petiolo crassiusculo 2–5 cm. longo densissime ferrugineo-pilosulo; lamina elliptica vel oblongo-elliptica 14–21 cm. longa 5.5–10.5 cm. lata et ultra abrupte breviacuminata, acumine triangulari acuto, basi acuta vel cuneato-attenuata, supra opaca glabra nervis manifestis, subtus vix pallidior ubique ad costam densius breviter pilosa vel villosula, costa crassiuscula elevata, nervis lateralibus utroque latere circa 17 angulo fere recto abeuntibus leviter arcuatis prominentibus in marginem desinentibus, venulis paucis obscuris; inflorescentia terminalis crasse 2 cm. longe pedunculata cymoso-paniculata dense multiflora circa 7 cm. longa et 9 cm. lata e basi radiatim ramosa, ramis crassis divaricatis densissime breviter ferrugineo-pilosis, bracteis minutis deciduis, floribus sessilibus dense aggregatis; hypanthium cum calyce 2 mm. longum dense ferrugineo-pilosulum obconicum, calyce brevi truncato; corolla ochroleuca dense breviter pilosula 5 mm. longa, tubo lato fauce dense barbato, lobis

oblongo-triangularibus tubo paullo longioribus acutiusculis intus minute puberulis; antherae oblongo-lineares subexsertae, stylo antheris longiore.

San Martín: Zepelacio, near Moyobamba, 1,100 meters, in forest, *Klug 3733* (herb. Field Mus. No. 753,164, type).

73. PALICOUREA Aubl.

Shrubs or small trees; leaves opposite or ternate, membranaceous or coriaceous; stipules small or large, persistent, bilobate, the lobes broad or narrow; flowers cymose, corymbose, or paniculate, the panicles often thyrsoid, the branches of the terminal inflorescence usually colored; calyx small, dentate; corolla tubular, with very short lobes, the tubes commonly more or less curved and somewhat dilated on one side at the base; fruit drupaceous, 2-5-celled.

The genus is close to *Psychotria*, and is not distinguished from it by any constant character, nevertheless *Palicourea* is a convenient group, and the species usually may be distinguished by their general aspect from all the *Psychotrias*. Some of the species listed below may be better referable to *Psychotria* than to *Palicourea*, but their proper status can not be settled satisfactorily without more ample material than is now available. The species are not so well differentiated as those of *Psychotria* usually are, and the following key will not be found altogether satisfactory for their separation.

Corolla densely villous, large, the hairs completely covering its outer surface and often tufted. Leaves opposite, often very large.

Leaves densely or sparsely pilose beneath.

Leaves glabrous on the upper surface; corolla about 2.5 cm. long *P. lachnantha*.

Leaves densely pubescent on the upper surface; corolla 1.5 cm. long or less *P. lasiophylla*.

Leaves glabrous or practically so.

Ovary narrowly turbinate, attenuate to the base, not clearly jointed with the pedicel *P. lasiantha*.

Ovary companulate, obtuse or rounded at the base, evidently jointed with the pedicel *P. condensata*.

Corolla glabrous, puberulent, or sparsely short-villous, often small.

Inflorescence corymbose or cymose, with strongly ascending branches, often fastigiately branched, or small and few-flowered, usually as broad as long or broader.

Leaves evidently pubescent beneath, at least along the costa or on the nerves, sometimes minutely puberulent.

Peduncles several times as long as the small, fastigiately branched inflorescence. Leaves minutely puberulent.

P. stenoclada.

Peduncles little if at all longer than the inflorescence, often much shorter.

Branches glabrous.

Leaves scaberulous on the upper surface, 2 cm. wide or less. *P. consobrina.*

Leaves glabrous on the upper surface, mostly 3.5–7.5 cm. wide. *P. bracteosa.*

Branches pilose or villous.

Leaves coriaceous; calyx lobes short, obtuse. . . *P. Lechleri.*

Leaves membranaceous; calyx lobes acute.

Inflorescence dark purple when dry, the bracts lanceolate. *P. Herrerae.*

Inflorescence yellowish when dried, the bracts subulate. *P. Buchtienii.*

Leaves glabrous beneath.

Stipule lobes broad, obtuse. Leaves blackish when dried.

P. nigricans.

Stipule lobes usually narrow, acute or acuminate.

Leaf blades small, 18 mm. wide or less. *P. saligna.*

Leaf blades larger, mostly 3–10 cm. wide.

Calyx lobes linear, much elongate. *P. cymosa.*

Calyx lobes short and broad.

Inflorescence lax and open, the branches spreading, the flowers long-pedicellate. *P. ponasae.*

Inflorescence dense, the branches suberect, the flowers sessile or short-pedicellate.

Primary branches of the inflorescence subtended at the base by bracts. *P. punicea.*

Primary branches without bracts at the base.

Bracts of the inflorescence minute and obscure.

P. corymbifera.

Bracts linear or spatulate, conspicuous.

- Inflorescence dark purple when dried; leaves
about 11 cm. wide.....*P. lucidula*.
- Inflorescence yellowish when dried; leaves 3.5–
6.5 cm. wide.....*P. lucentifolia*.
- Inflorescence paniculate or thyrsiform, sometimes spike-like,
usually longer than broad and many-flowered, the branches
not fastigiate, often spreading.
- Inflorescence elongate, spike-like, the primary branches sup-
pressed or very short and often appressed.
- Leaves blackish when dried, mostly 8–12 cm. wide; flowers
spreading or ascending.....*P. subspicata*.
- Leaves green or yellowish green when dried, mostly 3–5 cm.
wide; flowers suberect.....*P. charianthema*.
- Inflorescence not spike-like, the primary branches usually
elongate.
- Leaves all or chiefly ternate. Inflorescence elongate-thyrsi-
form; corolla pubescent.....*P. triphylla*.
- Leaves opposite.
- Leaves glabrous beneath.
- Corolla sparsely pilose or villosulous with spreading hairs.
P. Raimondii.
- Corolla glabrous or finely puberulent.
- Peduncles and branches of the inflorescence pubescent,
sometimes minutely so.
- Corolla in bud with 5 wart-like projections at or near
the apex.
- Corolla with 5 wart-like projections at its apex.
P. levis.
- Corolla with wart-like projections at the base of
the lobes.....*P. aphthosa*.
- Corolla without wart-like projections near the apex.
- Corolla glabrous; leaves narrowly lanceolate.
P. attenuata.
- Corolla puberulent or minutely sericeous; leaves
broader.
- Corolla minutely sericeous; leaves mostly 4–6
cm. wide.....*P. mitis*.

Corolla coarsely puberulent; leaves mostly
7-13 cm. wide..... *P. macrophylla*.

Peduncles and branches of the inflorescence glabrous
or practically so.

Leaves very large, as much as 30 cm. long and 12
cm. wide. Stipule lobes short, approximate,
obtuse; inflorescence dense, globose-thyrsoid.

P. Klugii.

Leaves much smaller, rarely more than 15 cm. long.

Inflorescence dense, the flowers in head-like
clusters..... *P. Jelskii*.

Inflorescence lax and open.

Leaf blades broadly obovate, coriaceous; corolla
minutely puberulent..... *P. sulphurea*.

Leaf blades narrowly oblong or lanceolate to
narrowly elliptic; corolla glabrous.

Leaf blades narrowly lanceolate or linear-
lanceolate, 2-3 cm. wide. *P. sandiensis*.

Leaf blades elliptic-oblong to narrowly ellip-
tic, usually wider.

Leaves bright green when dried, with
prominent venation, lustrous beneath.

P. crocea.

Leaves usually blackish when dried, the
veins obscure, dull beneath.

P. paraensis.

Leaves sparsely or densely pubescent beneath, at least
pilose on the veins or costa.

Branches sharply quadrangular. Corolla glabrous.

P. perquadrangularis.

Branches terete or subterete.

Stipules very large, 2-4 cm. long.

Leaves densely short-hirsute beneath; hypanthium
hispidulous..... *P. Kanehirae*.

Leaves pilose beneath on the veins; hypanthium
glabrous or puberulent.

Leaves with about 13 pairs of nerves; bracts
narrowly linear..... *P. longistipula*.

- Leaves with about 20 pairs of nerves; bracts lanceolate to ovate.....*P. Macbridei*.
- Stipules small, rarely more than 1 cm. long.
- Corolla sparsely or densely pilose with more or less elongate, spreading hairs, these sometimes very few.
- Inflorescence small, dense, compact; corolla very sparingly pilose.....*P. punoensis*.
- Inflorescence large, lax, open, much elongate; corolla densely or sparsely pilose.
- Veins of the leaves prominent beneath and reticulate; corolla 7-8 mm. long, sparsely pilose.....*P. chrysotricha*.
- Veins of the leaves obscure; corolla 10-14 mm. long.....*P. macrobotrys*.
- Corolla glabrous or minutely puberulent.
- Leaf blades narrowly oblong or lanceolate; stipule lobes elongate-subulate.....*P. angustifolia*.
- Leaf blades ovate to elliptic or broadly obovate, rarely oblong, but the stipule lobes then short and broad.
- Leaves densely and softly pubescent beneath.
- Corolla 6-8 mm. long...*P. chlorocaerulea*.
- Leaves sparsely pilose beneath, chiefly along the costa.
- Corolla 14-19 mm. long. Stipule lobes semi-ovate, obtuse.....*P. polyneura*.
- Corolla 8-12 mm. long.
- Stipules united to form a truncate sheath, the linear lobes remote. Corolla 9-12 mm. long.....*P. Weberbaueri*.
- Stipules bilobate, the lobes commonly approximate.
- Leaves with about 18 pairs of nerves, the blades broadly obovate...*P. obovata*.
- Leaves with 10-12 pairs of nerves.
- Stipules 4-5 mm. long.....*P. latifolia*.
- Stipules larger, usually 6-10 mm. long.

Leaf blades acuminate.

P. amethystina.

Leaf blades rounded and apiculate
at the apex. . . . *P. Haenkeana*.

Palicourea amethystina (R. & P.) DC. Prodr. 4: 527. 1830.
Psychotria amethystina R. & P. Fl. 2: 57. pl. 203, f. b. 1799.

A shrub 2-3 meters high, or reported even as a tree of 4.5 meters, the stout branchlets villosulous at first but soon glabrate; stipule sheath loose, 5-8 mm. long, the shorter lobes narrowly triangular, usually obtuse; leaves short-petiolate, coriaceous, elliptic to lance-oblong, 10-16 cm. long, acute or acuminate, acute at the base, short-villous or pilose beneath on the veins; panicles pedunculate, thyrsoïd or narrowly pyramidal, many-flowered, the short, stout branches spreading or somewhat reflexed, pilose or glabrate; calyx lobes minute, obtuse; corolla blue or purplish, glabrous, 8-12 mm. long; fruit oval, purple or black. Neg. 531.

Huánuco Described from Pillao and Huasahuasi, Ruiz & Pavón (two specimens of authentic material seen in hb. Kew., also photos. and fragments from hb. Berol.). Yanano, 1,800 meters, 3719. Muña, trail to Tambo de Vaca, 2,400 meters, 4299. Muña, 1,800-2,400 meters, Pearce in 1863.—Junín: Porvenir, 1,500-1,900 meters, dense forest, Killip & Smith 25944. Bolivia.

Palicourea angustifolia HBK. Nov. Gen. & Sp. 3: 367. 1820.

A slender shrub or small tree, sometimes 5 meters high, the young branchlets densely puberulent; stipule sheath 4-6 mm. long, the lobes erect, equaling or longer than the sheath, linear-subulate; leaves short-petiolate, oblong or oblong-lanceolate, 6-20 cm. long, long-acuminate, obtuse or acute at the base, puberulent or pilose beneath, at least on the veins; panicle pedunculate, thyrsoïd, open or dense, the branches pilose or puberulent; flowers pedicellate; calyx minute, acutely dentate; corolla 10-15 mm. long, puberulent or short-pilose, purple or purplish; fruit 4-5 mm. long, purple-black. Neg. 577.

Cajamarca: Tambillo, Jelski 373; Raimondi 7041 (both in hb. Berol.). Also in Ecuador, Colombia, and Venezuela.

The Peruvian specimens seem referable to this common northern species, which is not known otherwise south of the mountains of Colombia.

Palicourea aphthosa Standl. Field Mus. Bot. 11: 224. 1936.

A shrub 2 meters high, the young branchlets densely ochraceous-pilosulous; stipules 3-4 mm. long, the short lobes triangular, obtuse;

leaves short-petiolate, coriaceous, the blades lance-oblong, 6–8.5 cm. long, 1.5–3 cm. wide, short-acuminate, glabrous or nearly so; inflorescence pedunculate or sessile, leafy-bracted at the base, thyrsoid-paniculate, dense, many-flowered, 4–7 cm. long, the branches puberulent, the flowers sessile; calyx acutely 5-dentate; corolla yellow, 5–6 mm. long, glabrous or glabrate, the lobes slightly shorter than the tube.

Huánuco: Mountains southwest of Monzón, 2,500–2,900 meters, *Weberbauer 3401*, type.

Palicourea attenuata Rusby, Bull. N. Y. Bot. Gard. 4: 371. 1907.

A shrub 2–3 meters high, the branches glabrous; stipule sheath 2–3 mm. long, truncate, the distant lobes triangular; leaves short-petiolate, narrowly lance-oblong, 10–30 cm. long, 3–7 cm. wide, long-acuminate, glabrous; panicles thyrsoid, pedunculate, puberulent, 6–9 cm. long, dense, the branches spreading or even reflexed, the flowers sessile; calyx teeth minute and obscure; corolla 5 mm. long, orange-yellow, glabrous; fruit didymous-globose, 5 mm. long, nearly smooth.

Without locality, *Mathews 1947*. Also in Bolivia.

Palicourea bracteosa Standl. Field Mus. Bot. 8: 222. 1930.

A shrub or small tree 2–6 meters high, the branches glabrous; stipule sheath truncate, 3–4 mm. long, the lobes linear-subulate, remote, 4–5 mm. long; leaves short-petiolate, thick-membranaceous, the blades oblanceolate-oblong, 12–21 cm. long, 3.5–7.5 cm. wide, abruptly acuminate, glabrous above, thinly pilosulous beneath or glabrate; inflorescence sessile or pedunculate, depressed-cymose, dense, 4–11 cm. wide, the branches pilosulous, the bracts purple, oblong or obovate, the flowers sessile and finally more or less secund; calyx teeth broadly triangular, acutish; corolla white, densely pilose, 9 mm. long; fruit densely short-pilose.

Junín: In dense forest, Puerto Bermúdez, 375 meters, *Killip & Smith 26419*, type. Amazonian Brazil.

Palicourea Buchtienii Standl. Field Mus. Bot. 7: 317. 1931.

A slender shrub 1 meter high, the branches densely hirtellous; stipules ovate, 3–8 mm. long, the lobes approximate, linear-attenuate; leaves short-petiolate, small, the blades elliptic-oblong, 4–10 cm. long, 1.5–4 cm. wide, acuminate, minutely soft-puberulent; inflorescences pedunculate, corymbiform, 3–5.5 cm. wide, densely many-flowered, the branches divaricate or ascending, hirtellous, the

flowers sessile or short-pedicellate; calyx lobes acute; corolla 12 mm. long, sparsely villosulous, blue; fruit villosulous, 4 mm. long.

Junín: Mountains west of Huacapistana, 2,700 meters, *Weberbauer* 2280. Río Masamerich, 2,500 meters, *Weberbauer* 6674. Bolivia.

Palicourea caerulea (R. & P.) R. & S. Syst. Veg. 5: 194. 1819.
Psychotria caerulea R. & P. Fl. 2: 62. pl. 213, f. b. 1799.

A glabrous shrub; stipules ovate, entire; leaves opposite, short-petiolate, lanceolate, long-acuminate, acute at the base, large; panicles sessile, open, many-flowered, the branches spreading or ascending, the bracts ovate; flowers sessile in dense clusters; calyx minute, 5-dentate; corolla funnelform, 12 mm. long, yellowish; fruit blue.

Junín: The species was based upon a drawing of a plant growing at Vitoc, sent by Tafalla to Ruiz and Pavón.

The species is not included in the key. If the original description and illustration are correct in ascribing entire stipules to the plant, it is not a species of *Palicourea*, and the illustration suggests a *Psychotria*. Since probably no specimen of the species was preserved, it is likely to remain unplaced.

Palicourea charianthema Standl. Field Mus. Bot. 8: 226. 1930.

A slender shrub 1–3.5 meters high, the branchlets minutely puberulent; stipule sheath truncate, the linear, acute lobes 1–1.5 mm. long; leaves membranaceous, short-petiolate, the blades green when dried, oblong-lanceolate, 8–15 cm. long, 3–5 cm. wide, long-acuminate, glabrous above, minutely pilose beneath along the costa or glabrous, with about 12 pairs of nerves; inflorescence long-pedunculate, apparently pendent or recurved, raceme-like or spike-like, 10–22 cm. long and scarcely 2 cm. wide, the rachis puberulent, the flowers pedicellate; calyx lobes acute or acuminate; corolla 15 mm. long, sparsely short-pilose.

Loreto: Banks of Río Itaya above Iquitos, 110 meters, wooded banks, *Killip & Smith* 29395, type. Paraíso, *Williams* 3302. Iquitos, in forest, *Williams* 3678; *Killip & Smith* 27187, 27012. Peña Blanca, *Killip & Smith* 29658. Amazonian Brazil.

The inflorescence is variously described as light or dark red or as orange-red. The species is related to *P. macrobotrys*, but differs conspicuously in its exceedingly narrow inflorescence.

Palicourea chlorocaerulea Krause, Bot. Jahrb. 40: 339. 1908.

A shrub 3 meters high, the branches more or less ferruginous-pilosulous; stipule lobes triangular, acute, slightly shorter than the tube; leaves short-petiolate, coriaceous, brownish when dried, the blades obovate or obovate-lanceolate, 8-13 cm. long, 3.5-5 cm. wide, acuminate, paler and sparsely short-pilose beneath, especially on the veins; panicle pyramidal, 8-10 cm. long, pedunculate, open, the stiff branches puberulent, the flowers short-pedicellate; calyx minute, 5-dentate; corolla greenish blue, minutely puberulent or almost glabrous, 6-8 mm. long; fruit 4-5 mm. long. Neg. 581.

Cajamarca: Tambillo, *Raimondi* 6189.—Huánuco: Mountains southwest of Monsón, 2,500-2,900 meters, *Weberbauer* 3406 (photo. and fragm. of type seen, ex hb. Berol.).

Palicourea chrysotricha (Zahlbr.) Standl. Field Mus. Bot. 11: 226. 1936. *Psychotria chrysotricha* Zahlbr. Ann. Naturh. Hofmus. Wien 7: 1. 1892.

Branchlets short-pilose; stipule sheath 4-7 mm. long, the lobes short, subulate, remote; leaves on short, slender petioles, thick-membranaceous, the blades elliptic or oblong, 20-25 cm. long, 8-11 cm. wide, sparsely short-pilose beneath, the nerves about 20 pairs; inflorescence pedunculate, narrowly pyramidal-paniculate, 20 cm. long, open, short-pilose with golden hairs; calyx teeth broadly ovate, acutish; corolla bluish, short-villosulous, 7-8 mm. long. Neg. 582.

Cajamarca: Tambillo, *Jelski* 374, type collection (photo. and fragm. seen, ex hb. Berol.); *Raimondi* 4773.

Palicourea condensata Standl. Field Mus. Bot. 8: 224. 1930. *P. pachycalyx* Standl. loc. cit.

A shrub or small tree, 6 meters high or less, the branchlets glabrous, stout; stipule lobes 8 mm. long, oblong, obtuse; leaves large, short-petiolate, membranaceous, the blades elliptic or oblong-elliptic, blackish green when dried, 20-34 cm. long, 9-15 cm. wide, very shortly acuminate, glabrous, with 13-17 pairs of nerves; inflorescence pedunculate, cymose-paniculate or broadly thyrsoid, dense and many-flowered, the stout and often angled branches bright red, puberulent, the bracts linear or oblong, the flowers on short, thick pedicels; hypanthium glabrous or minutely puberulent; calyx lobes short, obtuse; corolla rose or purplish red, 16 mm. long, thick, densely villous-tomentose; fruit 6-9 mm. long. Neg. 587.

Loreto: Yurimaguas, 135 meters, in woods, *Killip & Smith* 28048 (type), 27607; *Williams* 3800, 7834. Iquitos, *Williams* 8002;

Killip & Smith 27225. Middle Río Blanco, *Tessmann 3027*. Lower Nanay, *Williams 440*. Punchana, in forest, *Williams 3754*. Mishuyacu, *Klug 50*. Mainas, *Poeppig* (photo. ex hb. Berol.). Balsapuerto, 150–350 meters, *Killip & Smith 28571*. San Lorenzo, *Killip & Smith 29208*. Caballo-cocha, in forest, *Williams 2078* (type of *P. pachycalyx*). Rancho Indiana, 110 meters, border of forest, *Mexia 6441a*. Río Putumayo, *Klug 1628*. Paraíso, *Williams 3284*. Santa Rosa, *Killip & Smith 28952*.—San Martín: Near Tarapoto, *Spruce 4150*. Lamas, *Williams 6338*. San Roque, in forest, *Williams 6985*.—Without locality, *Mathews 1490*. Also in Brazil and Bolivia.

The species is close to *P. lasiantha*, with which I have confused it in naming collections, but it appears fairly distinct by the characters given in the key. The corolla ordinarily is much thicker and stouter than in *P. lasiantha*.

Palicourea consobrina Standl. Field Mus. Bot. 4: 339. 1929.

A slender shrub with glabrous branchlets; stipule sheath 2–3 mm. long, the linear lobes half as long; leaves small, green when dried, short-petiolate, membranaceous, the blades elliptic-oblong or lance-oblong, 3.5–6 cm. long, 1–2 cm. wide, long-acuminate, minutely scaberulous above, appressed-pilous beneath, especially on the veins; inflorescence red, slender-pedunculate, dense and few-flowered, 1–1.5 cm. long and broad, the lowest bracts often foliaceous, the flowers crowded, pedicellate; calyx lobes oblong-linear, 3.5–4.5 mm. long; corolla purple, 9 mm. long, glabrous.

Cuzco: In forest, Pillahuata, Cerro de Cusilluyoc, 2,300 meters, *Pennell 13988*, type.

Palicourea corymbifera (Muell. Arg.) Standl. Field Mus. Bot. 7: 127. 1930. *Psychotria corymbifera* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 247. pl. 35. 1881.

A shrub or tree 2–7.5 meters high, the branches glabrous; leaves quaternate, short-petiolate, thick-membranaceous, more or less lustrous; stipule sheath short, with minute teeth; blades elliptic-oblong to linear-lanceolate, 15–30 cm. long, long-acuminate, minutely puberulent on the veins or almost glabrous; inflorescence fastigiate, umbelliform, 6–11 cm. broad, the lowest branches verticillate, yellow, suberect, finely puberulent; calyx very minutely denticulate; corolla violet or red, 8 mm. long, minutely puberulent or almost glabrous; fruit 5 mm. broad.

Loreto: Mishuyacu, in forest, *Klug 1311*. Also in Amazonian Brazil, Venezuela, and French Guiana.

Palicourea crocea (Sw.) R. & S. Syst. Veg. 5: 193. 1819. *Psychotria crocea* Sw. Prodr. Veg. Ind. Occ. 44. 1788. *Psychotria thyrsiflora* R. & P. Fl. 2: 57. pl. 204, f. b. 1799. *Palicourea thyrsiflora* DC. Prodr. 4: 528. 1830.

A slender, nearly glabrous shrub or small tree, sometimes 7.5 meters high, with a trunk 7.5 cm. in diameter; stipules 3–5 mm. long, the short lobes linear or subulate; leaves short-petiolate, green when dried, firm-membranaceous, the blades ovate-oblong or elliptic-oblong, 6–15 cm. long, acuminate, glabrous or nearly so; panicles sessile or pedunculate, pyramidal, many-flowered, open, the ascending or spreading branches glabrous or minutely puberulent, the bracts minute; flowers usually long-pedicellate; calyx lobes minute, ovate or rounded; corolla yellow to orange or red, 8–12 mm. long, glabrous; fruit 4–5 mm. long. Neg. 643.

Ayacucho: Carrapa, 1,500 meters, Killip & Smith 30672, 22358, 23203.—Huánuco: Type of *Psychotria thyrsiflora* from Cochoero; photo. seen of specimen in hb. Berol. Casapí, Fielding 447. Pampayacu, Sawada 24.—Junín: Pangoa, Mathews 1167. Chanchamayo Valley, 1,200 meters, Schunke 285. Eneñas, 1,700 meters, dense forest, Killip & Smith 25729, 25750. Yapas, 1,500 meters, Killip & Smith 25594. Río Pinedo, Killip & Smith 23658.—Loreto: Sierra del Pongo, 650 meters, Mexia 6271.—San Martín: San Roque, Williams 7528, 6949, 7051. Moyobamba, Weberbauer 4553. Widely distributed in tropical America, from Bolivia and Argentina northward.

Palicourea cymosa (R. & P.) Standl. Field Mus. Bot. 11: 226. 1936. *Psychotria cymosa* R. & P. Fl. 2: 59. pl. 206, f. b. 1799.

A nearly glabrous shrub; stipules biparted, the lobes remote, linear-subulate; leaves petiolate, firm-membranaceous, the blades elliptic-oblong, acuminate, acute at the base, glabrous; inflorescence pedunculate, cymose-paniculate, short and dense, the bracts subulate to oblong; calyx lobes 5, subulate to oblong, elongate; fruit oval, violet. Neg. 502.

Huánuco: Described from Chacahuasi and Pampamarca, near Pillao, Ruiz & Pavón (photo. and fragm. seen, ex hb. Berol.). Río Huallaga near Cochoero, in forest, Poeppig 1739.

Psychotria flavescens HBK. was ascribed doubtfully to Peru, but it appears to be rather an Ecuadorian species.

Palicourea Haenkeana DC. Prodr. 4: 530. 1830. *Cinchona Haenkeana* Bartl. ex DC. loc. cit. in syn.

Stipules triangular, acute; leaves petiolate, oval, about 21 cm. long and 10.5 cm. wide, rounded and shortly produced at the apex, abruptly contracted at the base, thin, pilose beneath, especially along the nerves, with about 11 pairs of nerves, these conspicuous, the lower ones divergent at almost a right angle, the upper at an acute angle, the veins prominent and reticulate; panicle pedunculate, thyrsoid-pyramidal, 14 cm. long, the rachis very stout, the branches ascending or spreading, the flowers pedicellate; bracts deciduous; corolla purplish, glabrous, 8 mm. long.

Type from "Peruviae montanis Oronoccensibus" (probably Huánuco), collected by Haenke.

The only material I have seen is a specimen in the herbarium of the Missouri Botanical Garden, which apparently is an authentic one—from the Bernhardt Herbarium. The plant represented is probably only a somewhat abnormal form of *P. amethystina*, and therefore was collected in the mountains of Peru. The leaves—there is a single one with the specimen mentioned—appear to be somewhat abnormal. In *Palicourea* the leaves nearly always are acute or acuminate.

***Palicourea Herrerae* Standl. Field Mus. Bot. 4: 339. 1929.**

A shrub or small tree, the slender branches short-hispidulous; stipule sheath 2–3 mm. long, the lobes narrowly triangular, acute, 1 mm. long; leaves small, green, short-petiolate, firm-membranaceous, the blades elliptic-oblong, 4.5–6 cm. long, 1–2 cm. wide, long-acuminate, scabrous above, whitish-hispidulous beneath; inflorescence cymose-paniculate, dense, few-flowered, 1–2 cm. long and wide, the branches hispidulous, the bracts subulate; flowers sessile or subsessile; calyx lobes lance-oblong, acuminate; corolla purple, 10 mm. long, hispidulous; fruit 5 mm. long, sparsely pilose.

Cuzco: Thicket above Pillahuata, Cerro de Cusilluyoc, 2,800–3,100 meters, *Pennell 14130*, type.

***Palicourea Jelskii* Standl. Field Mus. Bot. 8: 221. 1930.**

A tree, the branchlets minutely puberulent; stipules 1 cm. long, bifid, the lobes broadly lance-oblong, acute; leaves slender-petiolate, firm, the blades narrowly oblong or oblanceolate-oblong, 11–12 cm. long, 3–4 cm. wide, acute or short-acuminate, glabrous, with 15 pairs of nerves; inflorescence sessile or short-pedunculate, dense, 2–2.5 cm. long, composed of few dense, racemose heads, the branches glabrous, the flowers sessile; calyx lobes obtuse or rounded; corolla in bud only 3.5 mm. long, glabrous, minutely 5-tuberculate at the apex.

Cajamarca: Tambillo, *Jelski 357*, type; *Raimondi 4962*.

The plant may be more properly referable to the genus *Psychotria*.

Palicourea Kanehirae Standl. Field Mus. Bot. 4: 337. 1929.

A small tree, the branches densely long-pilose; stipules oblong, 2.5–3.8 cm. long, shallowly bilobate, the lobes acute; leaves petiolate, the blades broadly elliptic or rounded-obovate, 14–21 cm. long, 9–12 cm. wide, rounded and cuspidate at the apex, narrowed and obtuse at the base, hispidulous or glabrate above, densely short-hirsute beneath, with about 19 pairs of nerves; inflorescence pedunculate, pyramidal-paniculate, 9–11 cm. long, the branches densely pilose, the flowers pedicellate; calyx lobes 2.5–3.5 mm. long, oblong or ovate, obtuse or subacute; corolla 9 mm. long, sparsely pilosulous.

Huánuco: Pampayacu, *Kanehira 18*, type.

Palicourea Klugii Standl. Field Mus. Bot. 11: 228. 1936.

A tree 5 meters high, almost wholly glabrous; stipules 6–8 mm. long, bilobate, the lobes very obtuse; leaves short-petiolate, blackish when dried, firm, the blades lance-oblong, 24–35 cm. long, 8–12 cm. wide, short-acuminate, with about 14 pairs of nerves; inflorescence globose-thyrsoïd, short-pedunculate, dense, many-flowered, 6 cm. long, the pedicels mostly 1–1.5 cm. long; calyx annuliform, obsoletely denticulate; corolla lilac, glabrous, 17 mm. long.

Loreto: Florida, Río Putumayo, 200 meters, in forest, *Klug 1977*, type.

The collector reports the vernacular name as “parinari,” but this probably is an error.

Palicourea lachnantha Standl. Field Mus. Bot. 11: 228. 1936.

A shrub 4 meters high, the branches glabrous or nearly so; stipules 8–10 mm. long, bifid almost to the base, the lobes linear-lanceolate, attenuate; leaves large, blackish when dried, firm-membranaceous, short-petiolate, the blades lance-oblong, 22–25 cm. long, 7–8 cm. wide, puberulent above on the veins, short-pilose beneath on the veins, the nerves about 15 pairs; inflorescence cymose, short-pedunculate, densely many-flowered, about 5 cm. long, the branches densely pilose, the flowers sessile or short-pedicellate; hypanthium villous; calyx lobes linear-lanceolate, villous, 3 mm. long; corolla 2.5 cm. long, densely long-pilose, red-violet.

Loreto: Florida, Río Putumayo, 200 meters, in forest, *Klug 1978*, type.

Palicourea lasiantha Krause, Bot. Jahrb. 40: 341. 1908. *P. irrasiflora* Wernham, Journ. Bot. 55: 280. 1917.

A shrub 1–2 meters high, nearly glabrous; stipules 4–7 mm. long, bifid, the lobes rounded; leaves large, rather firm, often blackish when dried, petiolate, oblong to elliptic, chiefly 20–30 cm. long, short-acuminate, glabrous or nearly so; inflorescence thyrsoid-paniculate, large, usually open, long-pedunculate, the branches spreading or ascending, puberulent or glabrate, the flowers pedicellate; calyx lobes ovate, acutish; corolla purple or pink, 1.5–2 cm. long, densely villous-tomentose. Neg. 609.

Huánuco: Between Monsón and Río Huallaga, open forest, 600 meters, *Weberbauer* 3599, type (photo. and fragm. seen, ex hb. Berol.).—Junín: La Merced, 600–1,200 meters, 5497, 5737. Chanchamayo Valley, 1,000–1,500 meters, *Schunke* 333, 1735, 430.—Loreto: Masisea, 275 meters, open woods, *Killip & Smith* 26836. Pampa de Sacramento, *Castelnau* in 1847.—Puno: *Raimondi* 10975. Also in Bolivia.

Killip and Smith report the vernacular name as “jaboncillo,” and state that the leaves are “used as a soap,” a report that probably is not applicable to the present plant.

Palicourea lasiophylla Krause, Bot. Jahrb. 40: 340. 1908. *P. villosiflora* Standl. Field Mus. Bot. 8: 222. 1930.

A shrub or tree 2–10 meters high, the young branches fulvous-pilose; stipule sheath 4–5 mm. long, the lobes lance-linear, 7–8 mm. long; leaves green when dried, firm, short-petiolate, the blades lance-oblong, 12–30 cm. long, 4–7 cm. wide, acuminate, rough-pilosulous above, pilose beneath, with about 18 pairs of nerves; inflorescence pedunculate, depressed-cymose, dense and many-flowered, 5 cm. wide, the branches villous-pilose, the bracts linear, the flowers sessile; calyx teeth triangular, acute; corolla white or pink, 10–16 mm. long, densely villous. Neg. 607.

Cajamarca: Tambillo, *Raimondi* 5899.—Junín: *Schunke* Hacienda above San Ramón, 1,500 meters, dense forest, *Killip & Smith* 24568, type of *P. villosiflora*.—Loreto: Mountains north of Moyobamba, in forest and thickets, 1,400 meters, *Weberbauer* 4643, type (photo. and fragm. seen, ex hb. Berol.).—San Martín: Zepelacio, 1,200–1,600 meters, mountain forest, *Klug* 3424; a shrub of 2 meters; flowers dark violet.

Palicourea latifolia Krause, Bot. Jahrb. 40: 338. 1908.

A shrub or small tree 5 meters high, the branchlets sparsely puberulent; stipules broadly ovate, 4–5 mm. long, incised at the apex; leaves slender-petiolate, firm-herbaceous, the blades obovate-elliptic, 14–17 cm. long, 7–10 cm. wide, short-acuminate, sparsely short-pilose beneath, especially on the veins; panicles pedunculate, pyramidal, 20 cm. long or less, lax, the branches sparsely puberulent, the flowers short-pedicellate; calyx minute, obsoletely denticulate; corolla blue, 12 mm. long, glabrous. Neg. 606.

Huánuco: Mountains southwest of Monsón, 1,700 meters, *Weberbauer 3564*, type (photo. and fragm. seen, ex hb. Berol.).

Probably only a form of *P. amethystina*.

Palicourea laxa (R. & P.) R. & S. Syst. Veg. 5: 195. 1819. *Psychotria laxa* R. & P. Fl. 2: 61. pl. 212, f. b. 1799. *Psychotria luteo-virens* Pers. Syn. Pl. 1: 208. 1805.

A glabrous shrub; stipules short, bifid, the lobes ovate, obtuse; leaves short-petiolate, oblong-elliptic, large, acuminate, at the base acute or obtuse; panicles elongate, pedunculate, recurved in fruit, the primary bracts foliaceous, lanceolate, the flowers pedicellate; calyx minute, 5-dentate; corolla yellowish green, slender, funnel-form; fruit purplish green, ovoid, subdidymous.

Based upon a drawing and description sent to Ruiz and Pavón by Tafalla from San Antonio de Playa Grande.

In spite of the description of the plant as glabrous, it seems probable, after examination of the plate, that this is a synonym of *Palicourea macrobotrys*. Since probably no specimen of the species is preserved, it will be difficult to place it satisfactorily. It is not included in the key.

Palicourea Lechleri Standl. Field Mus. Bot. 4: 338. 1929.

A shrub, the branchlets densely short-pilose; stipule sheath 1–2 mm. long, the lobes linear; leaves short-petiolate, coriaceous, yellowish green when dried, the blades elliptic-oblong or ovate-oblong, 3–5 cm. long, 1.5–2 cm. wide, long-acuminate, acute or obtuse at the base, minutely scaberrulous above, hispidulous beneath; inflorescence sessile or short-pedunculate, cymose-corymbose, 1.5–2 cm. long, densely few-flowered, the branches yellow-hispidulous, the flowers sessile or subsessile; hypanthium hispidulous; calyx lobes oblong, obtuse; fruit glabrate, 3–3.5 mm. long.

Puno: Tatanara, *Lechler 2610*, type.

Palicourea levis Standl. Field Mus. Bot. 4: 336. 1929.

A shrub or tree 2-6 meters high, the branches glabrous or minutely puberulent; stipule sheath 1.5-2.5 mm. long, the lobes linear or triangular, 1.5-2 mm. long; leaves short-petiolate, firm-membranaceous, the blades oblong or elliptic-oblong, 6-11 cm. long, 2-4 cm. wide, acute or short-acuminate, obtuse or abruptly contracted at the base, sometimes minutely barbate beneath in the axils of the nerves, otherwise glabrous; inflorescence small, dense, many-flowered, pedunculate or sessile, thyrsoïd-paniculate, 3-7 cm. long, the branches minutely puberulent or hirtellous, the flowers sessile, congested; calyx teeth short, obtuse; corolla white or yellowish, minutely puberulent, 5-6 mm. long; fruit 6 mm. broad, didymous, glabrous.

Ayacucho(?): Huaicani, 3,000-3,300 meters, *Pearce* in 1866.—San Martín: Mount Guairapurina, near Tarapoto, *Spruce 4062*, type. Also in Ecuador.

Palicourea longistipula Standl. Field Mus. Bot. 4: 336. 1929.

Branchlets glabrous, or the youngest bifariously pilosulous; stipules 2-3.5 cm. long, bifid, the segments semiovate, acuminate; leaves short-petiolate, coriaceous, the blades elliptic or oblong-elliptic, 11-18 cm. long, 4-9 cm. wide, long-acuminate, yellowish green, sparsely scaberulous above, hispidulous beneath on the veins; inflorescence thyrsoïd-paniculate, pedunculate, 5 cm. long, dense, the branches hispidulous, the flowers sessile, densely congested; calyx lobes minute, acute; corolla 5-6 mm. long, sparsely puberulent or glabrate.

Puno: Tatanara, *Lechler 2622*, type.

Palicourea lucentifolia Standl. Field Mus. Bot. 8: 223. 1930.

A shrub, glabrous outside the inflorescence; stipule sheath truncate, the linear-attenuate lobes 4-5 mm. long; leaves opposite, almost sessile, firm-membranaceous, lustrous, yellow-green, lance-oblong or narrowly oblong-lanceolate, 10-18 cm. long, 3.5-5.5 cm. wide, long-acuminate; inflorescence corymbose, umbelliform, long-pedunculate, 10 cm. broad, the fastigate branches suberect, minutely puberulent; bracts linear or subulate, 4-10 mm. long, the flowers more or less secund, sessile or short-pedicellate; calyx minute, obsoletely denticulate.

Loreto: Edge of forest, La Victoria on the Amazon, *Williams 2906*, type.

Palicourea lucidula Standl. Field Mus. Bot. 8: 225. 1930.

A shrub with glabrous branches; stipule sheath 1.5–2.5 mm. long, the lobes remote, linear-subulate, 4–5 mm. long; leaves very shortly petiolate, bright green, membranaceous, the blades elliptic-oblong, 29–32 cm. long, 11 cm. wide, acuminate, glabrous, with about 20 pairs of nerves; inflorescence cymose-paniculate, fastigately branched, dense, long-pedunculate, 6 cm. long, the thick branches minutely puberulent or almost glabrous, the bracts foliaceous, lanceolate or narrowly spatulate, 5–10 mm. long, the flowers sessile or short-pedicellate, more or less secund; fruit globose or somewhat didymous, 4–5.5 mm. wide, glabrous, the carpels almost smooth.

Loreto: Santa Rosa, 135 meters, dense forest, *Killip & Smith 28816*, type. Between Yurimaguas and Balsapuerto, dense forest, *Killip & Smith 28089*.

Branches and bracts reddish brown to purple.

Palicourea Macbridei Standl. Field Mus. Bot. 4: 338. 1929.

A shrub or small tree, the stout branchlets glabrous; stipules 2–3.5 cm. long, ovate, acuminate, cordate at the base; leaves short-petiolate, subcoriaceous, the blades elliptic or elliptic-oblong, 16–32 cm. long, 6–14 cm. wide, abruptly short-acuminate, glabrous above except along the costa, brownish beneath, short-hirsute on the veins; inflorescence thyrsoid-paniculate, pedunculate, dense, 8 cm. long, the branches sparsely pilosulous or glabrate, the bracts ovate or oblong, the flowers sessile or short-pedicellate; calyx lobes short, obtuse; fruit globose, 5 mm. long, costate.

Huánuco: Cuschi, 1,500 meters, in rain forest, *Macbride 4821*, type.

Flowers described as metallic purple.

Palicourea macrobotrys (R. & P.) R. & S. Syst. Veg. 5: 194. 1819. *Psychotria macrobotrys* R. & P. Fl. 2: 57. pl. 203, f. a. 1799. *Palicourea lasioneura* Krause, Verh. Bot. Ver. Brandenb. 50: 112. 1908. *Palicourea acanthaceoides* Wernham, Journ. Bot. 55: 279. 1917.

A shrub or small tree, the branches glabrous or puberulent; stipule sheath 4 mm. long or less, truncate, the lobes subulate, equaling or longer than the sheath; leaves green, thin, short-petiolate, usually large, the blades oblong to ovate-oblong or lance-oblong, long-acuminate, usually finely and softly pubescent beneath over the whole surface, the veins inconspicuous; inflorescence elongate-

thyrsoid-paniculate, sessile or pedunculate, often pendent, the short, spreading branches puberulent, the flowers pedicellate; calyx lobes minute, acute; corolla about 1 cm. long, short-pilose, yellow or tinged with red; fruit purplish black, 4–5 mm. long. Neg. 608.

Ayacucho: Near Kimpitiriki, 400 meters, dense forest, *Killip & Smith 23018*. Estrella, 500 meters, *Killip & Smith 22622*.—Cuzco: Colpani, Urubamba Valley, 1,500 meters, *Cook & Gilbert 1046*. Quebrada de Quispicanchi, 3,250 meters, *Herrera 2612*.—Huánuco: Type from Cochoero and Chinchao, *Ruiz & Pavón* (photo. seen ex hb. Berol.). Casapí, *Mathews 1947, 1946* (type collection of *P. acanthaceoides*). Posuso, 600 meters, 4599. Pampayacu, *Kanehira 109*.—Junín: Vitoc, *McLean*. Valley of Mararioch, near Tarma, *Philippi*. Río Perené, *Killip & Smith 25143*. La Merced, 700 meters, *Killip & Smith 23471, 23937*. Río Paucartambo Valley, 700 meters, *Killip & Smith 25286*. Puerto Yessup, dense forest, 400 meters, *Killip & Smith 26231*.—Loreto: Rancho Indiana, *Mexia 6422*.—Puno: Chunchusmayo, *Weberbauer 1190*.—San Martín: Tarapoto, *Williams 6571; Ule 6629*, type of *P. lasioneura* (photo. and fragm. seen, ex hb. Berol.). San Roque, in forest, *Williams 7787, 7000*. Lamas, *Williams 6410*.—Without locality: *McLean; Mathews 1945*. Bolivia to Brazil and Colombia. “Quillo-sisa.”

The branches of the inflorescence are pink or red.

***Palicourea macrophylla* (HBK.) Standl.** Field Mus. Bot. 7: 321. 1931. *Nonatelia macrophylla* HBK. Nov. Gen. & Sp. 3: 423. 1819.

A shrub or tree 3.5–7.5 meters high with glabrous branches; stipules short, obtusely bilobate; leaves large, often somewhat blackened in drying, petiolate, elliptic or oblong-elliptic, mostly 17–25 cm. long and 10–16 cm. wide, abruptly short-acuminate, acute to rounded at the base, glabrous above, beneath glabrous or sparsely pubescent; inflorescence long-pedunculate, large, rather dense, thyrsiform-paniculate, the branches puberulent, the flowers pedicellate; calyx teeth acute; corolla 1 cm. long, yellow, or with yellow lobes and white tube, densely puberulent; fruit purple, subglobose, 4–5-celled.

Junín: Between Azupizú and Santa Rosa, 625 meters, dense forest, *Killip & Smith 26142*. Puerto Bermúdez, 375 meters, *Killip & Smith 26613*. San Nicolás, 1,100 meters, *Killip & Smith 26080*.—Loreto: Above Pongo de Manseriche, *Mexia 6225*. Bolivia to Brazil, British Guiana, and Venezuela.

Palicourea mitis (R. & P.) DC. Prodr. 4: 527. 1830. *Psychotria mitis* R. & P. Fl. 2: 60. pl. 208, f. b. 1799.

A shrub 4 meters high or less; stipules shallowly bilobate, the lobes rounded, appressed; leaves short-petiolate, subcoriaceous, brownish or yellowish when dried, the blades obovate or lance-oblong, medium-sized, acuminate, acute at the base, minutely appressed-pilose above and soft to the touch, beneath glabrous except along the costa, there sparsely pilose, the veins prominent and reticulate; panicles sessile or pedunculate, large and broad, open, the bracts subulate, the flowers sessile; calyx minute, 5-dentate; corolla yellow, about 1 cm. long, minutely and sparsely sericeous outside or glabrate; fruit oval, 4–5 mm. long, glabrous. Neg. 25808.

Cajamarca: Between Chuto and Cutervo, *Jelski* 378.—Amazonas: Entrada al valle de Huayabamba, Chachapoyas, *Raimondi* 297.—Huánuco: Type from Chacahuasi, near Pillao, *Ruiz & Pavón* (fragm. seen, ex hb. Berol.).—Junín: West of Huacapistana, 2,800 meters, *Weberbauer* 2278.

Palicourea nigricans Krause, Bot. Jahrb. 40: 428. 1908, nomen; Verh. Bot. Ver. Brandenb. 50: 112. 1908.

A nearly glabrous shrub or tree 3–6 meters high; stipules united into a sheath 3 mm. long, bilobate, the lobes broadly ovate, obtuse; leaves large, firm, usually blackening in drying, petiolate, the blades ovate-oblong to broadly elliptic or oval, 12–24 cm. long, 5–9 cm. wide, or larger, acuminate, acutish to rounded at the base, glabrous; panicles pedunculate, small, dense and compact, thyriform-paniculate, usually as broad as long, the branches ascending or spreading, glabrate; calyx teeth minute, acute; corolla dark blue, 12–15 mm. long, minutely papillose. Neg. 618.

Junín: Chanchamayo Valley, 1,200–1,500 meters, *Schunke* 339, 1375 (form with narrow leaves; perhaps distinct).—Loreto: Cerro de Escalera, 1,200 meters, *Ule* 6772, type (photo. and fragm. seen, ex hb. Berol.). Yurimaguas, edge of forest, *Williams* 3799, 4682. Santa Rosa, forest, *Williams* 4828.—San Martín: Mainas Alto, *Poeppig*. Zepelacio, 1,200–1,600 meters, mountain forest, *Klug* 3406. Río Mayo, *Spruce* 4437. Also in Amazonian Brazil and Venezuela.

Palicourea obovata (R. & P.) DC. Prodr. 4: 527. 1830. *Psychotria obovata* R. & P. Fl. 2: 58. pl. 204, f. a. 1799. *Psychotria hyacinthiflora* R. & P. op. cit. 62. pl. 213, f. a. 1799. *Psychotria hyacinthoides* Pers. Syn. Pl. 1: 208. 1805. *Palicourea hyacinthiflora* R. & S. Syst. Veg. 5: 194. 1819.

A shrub or tree, sometimes 7.5 meters high, the branches glabrous; stipules bilobate, the lobes short, obtuse or rounded; leaves short-petiolate, coriaceous, yellowish green when dried, the blades elliptic to broadly obovate, often as much as 20 cm. long and 12 cm. wide, rounded and obtusely produced at the apex, cuneate at the base, more or less pilose beneath on the veins or glabrate, the nerves prominent; inflorescence short-pedunculate, narrowly pyramidal-paniculate, the stout branches spreading or even somewhat reflexed, glabrous or short-pilose; calyx with short, broad, rounded lobes; corolla blue or purple, about 13 mm. long, glabrous, the lobes spreading or reflexed; fruit globose, purple. Negs. 533, 597.

Huánuco: Described from forests of Chinchao and Pillao, *Ruiz & Pavón*; photo. and fragm. of presumably authentic material seen, ex hb. Berol. *P. hyacinthiflora* was based upon a drawing sent by Tafalla from Chicoplaya to Ruiz and Pavón; a specimen collected by Ruiz and labeled *Psychotria hyacinthiflora* is in hb. Berol., a photo. in hb. Field Mus.—Junín: Dos de Mayo, 1,800 meters, dense forest, *Killip & Smith 25790*.—San Martín: Tocache, *Poeppig 1996*.

Palicourea paraensis (Muell. Arg.) Standl. Field Mus. Bot. 11: 226. 1936. *Psychotria paraensis* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 245. 1881.

A slender shrub 2–3.5 meters high, the branches glabrous; stipules small, the short lobes triangular-subulate; leaves petiolate, membranaceous, green or blackish when dried, the blades oblong or lance-oblong, 5–14 cm. long, acute or acuminate, glabrous, sometimes slightly lustrous beneath, with 9–11 pairs of nerves; panicles short and ovoid or somewhat elongate, rather open, the branches glabrous or nearly so; calyx lobes minute, triangular, acute, usually rather conspicuously unequal; corolla red or orange, puberulent at the apex in bud, otherwise glabrous. Neg. 6096.

Loreto: San Antonio, *Williams 3359*. Caballo-cocha, in forest, *Williams 2472, 2275, 2287*. La Victoria, in or at edge of forest, *Williams 2725, 2901*. Río Itaya, *Killip & Smith 29538*. Pebas, *Williams 1841*. Río Putumayo, in clearing, *Klug 1623*. Also in Amazonian Brazil.

Psychotria subscandens Muell. Arg. probably is not distinct.

Palicourea perquadrangularis Wernham, Journ. Bot. 55: 341. 1917.

This species, which is common in Venezuela, was based by Wernham upon three collections from that country. With these he cited a specimen collected by Pearce at "Muña," believing that it was Venezuelan. The Peruvian collection should be examined further, in order to determine whether it really is referable to *P. perquadrangularis*, a reference that is probably incorrect.

Palicourea polyneura Krause, Notizbl. Bot. Gart. Berlin 8: 101. 1922.

A shrub 2 meters high with glabrous branches; stipule sheath 3–4 mm. long, the short lobes triangular-oblong, acute; leaves short-petiolate, coriaceous, fuscous when dried, the blades obovate or elliptic-obovate, 10–14 cm. long, 5–7 cm. wide, acuminate, pilose beneath on the veins; panicles thyrsoïd, short and dense, the branches short-pilose, the flowers short-pedicellate; calyx lobes ovate-lanceolate, acute; corolla blue, 14–19 mm. long, glabrous; fruit 4–5 mm. long. Neg. 622.

Ayacucho: Above Yanamonte, 2,800 meters, *Weberbauer 5660*, type collection.

Palicourea ponasae Krause, Bot. Jahrb. 40: 431. 1908, nomen; Verh. Bot. Ver. Brandenb. 50: 114. 1908.

A slender shrub 2–4 meters high, the branches glabrous; stipule sheath short, truncate, the lobes linear-subulate; leaves slender-petiolate, membranaceous, elliptic-oblong or ovate-elliptic, 6–7.5 cm. long, 3 cm. wide, abruptly long-acuminate, glabrous; panicles lax, long-pedunculate, as much as 8 cm. long and usually broader, the pedicels 6–8 mm. long; calyx teeth short; corolla pale yellow, glabrous, 13–15 mm. long. Neg. 621.

Loreto: Cerro de Ponasa, 1,400 meters, *Ule 6776*, type (photo. and fragm. seen, ex hb. Berol.).

Palicourea punicea (R. & P.) DC. Prodr. 4: 526. 1830. *Psychotria punicea* R. & P. Fl. 2: 62. pl. 212, f. a. 1799. *Palicourea iquitoensis* Krause, Bot. Jahrb. 40: 401. 1908, nomen; Verh. Bot. Ver. Brandenb. 50: 115. 1908.

A shrub or a slender tree, 2–7.5 meters high, the branches glabrous or minutely puberulent, terete; stipule sheath short, the lobes lanceolate-attenuate, about 1 cm. long; leaves medium-sized or large, firm-membranaceous, often blackish when dried, oblong-ovate to oblong-lanceolate, mostly 15–25 cm. long, long-acuminate, glabrous; inflorescence long-pedunculate, cymose-corymbose, more

or less fastigiately branched, small, dense, the flowers short-pedicellate; calyx subtruncate, obsoletely crenate-dentate; corolla yellow or pink(?), reported also as red, glabrous, about 2 cm. long, the lobes often margined with red, the branches of the inflorescence orange. Negs. 624, 598.

Huánuco(?): Based upon a plate and description sent by Tafalla from San Antonio de Playa Grande; photo. seen of specimen in hb. Berol. labeled *Psychotria punicea* and collected by Ruiz.—Loreto: Type of *P. iquitoensis* collected near Iquitos, Ule 6237; photo. and fragm. seen, ex hb. Berol. Middle Ucayali, Tessmann 624. Near Iquitos, Williams 1451, 1515, 1384, 8003, 3636; Killip & Smith 26932. Mishuyacu, dense forest, Killip & Smith 29865; Klug 1046.—San Martín: Tarapoto, Williams 5612, 5880. Also in Bolivia.

***Palicourea punoensis* Standl.** Field Mus. Bot. 11: 231. 1936.

A shrub with glabrous branches; stipules bilobate, the lobes triangular, acute; leaves short-petiolate, subcoriaceous, the blades narrowly lance-oblong, 8–13 cm. long, 2.5–3.5 cm. wide, long-acuminate, brownish when dried, beneath sparsely and minutely pilosulous, or hispidulous on the costa, the nerves about 17 pairs; inflorescence pedunculate, thyrsoid, dense, 2.5–4 cm. long, the branches hispidulous, the flowers sessile or nearly so; calyx teeth obtuse or acutish; corolla greenish, glabrous or sparsely hispidulous, 5–6 mm. long.

Puno: Between Tambo Yuncacoya and Tambo Cachicachi, on the road from Sandía to Chunchosmayo, 1,800–2,200 meters, Weberbauer 1143.

***Palicourea Raimondii* Standl.** Field Mus. Bot. 8: 220. 1930.

Branches glabrous; stipule sheath short, the lobes linear-subulate, 1 cm. long; leaves short-petiolate, thick-coriaceous, the blades elliptic or elliptic-oval, 9–14 cm. long, 4–7 cm. wide, acute or short-acuminate, obtuse or rounded at the base, dark brown when dried, glabrous, the nerves about 15 pairs; inflorescence short-pedunculate, pyramidal, cymose-paniculate, 8 cm. long, the branches sparsely ferruginous-villosulous, the flowers sessile or nearly so; calyx shortly obtuse-dentate; corolla yellow, in bud 3.5–4 mm. long, sparsely and minutely villosulous.

Puno: Road from Sandía to Valle Grande, between Entre Ramos and Yuncacoya, *Raimondi* 11114, type.

Palicourea saligna Standl. Field Mus. Bot. 4: 340. 1929.

A glabrous shrub or small tree; stipule sheath 1–1.5 mm. long, truncate, the 4 remote teeth triangular, acute; leaves short-petiolate, firm, the blades lanceolate, 3–6 cm. long, 1–1.8 cm. wide, narrowly attenuate-acuminate, the nerves about 8 pairs; inflorescence long-pedunculate, corymbiform, lax, few-flowered, the flowers pedicellate; calyx lobes rounded-ovate, apiculate; fruit 5 mm. long.

Cuzco: In forest below Pillahuata, Cerro de Cusilluyoc, 2,300 meters, *Pennell 13978*, type.

Palicourea sandiensis Krause, Bot. Jahrb. 40: 337. 1908.

A shrub 3 meters high with glabrous branches; stipules short, shallowly bifid, 4 mm. long; leaves short-petiolate, subcoriaceous, the blades lanceolate or linear-lanceolate, 10–15 cm. long, 2–3 cm. wide, long-acuminate, long-attenuate to the base, glabrous; panicles long-pedunculate, small, glabrous, sometimes as much as 10 cm. long, the flowers long-pedicellate; calyx obsoletely dentate; corolla yellow, glabrous, 12–14 mm. long; fruit globose, 4 mm. in diameter. Neg. 630.

Puno: Between Tambo Azalaya and Tambo Ichubamba, on the road from Sandía to Chunchosmayo, *Weberbauer 1111*, type (photo. in hb. Field Mus.). Sandía, *Raimondi 11118*.

Palicourea stenoclada (Muell. Arg.) Standl. Field Mus. Bot. 8: 380. 1931. *Psychotria stenoclada* Muell. Arg. in Mart. Fl. Bras. 6, pt. 5: 254. 1881.

A slender shrub 1–3.5 meters high, the branches puberulent or glabrate; stipule sheath short, the short lobes triangular and acute or subulate; leaves short-petiolate, membranaceous, green when dried, the blades ovate-lanceolate, 7–14 cm. long, long-acuminate, puberulent beneath, especially on the veins, with about 10 pairs of nerves; peduncles much elongate, the inflorescence corymbiform, fastigiately branched, small and dense, the branches puberulent or glabrate; calyx lobes triangular, acute; corolla yellow, with red-margined lobes, 14–15 mm. long, glabrous; branches of the inflorescence orange-red. Neg. 641.

Loreto: Leticia, in forest, *Williams 3052*. Mishuyacu, *Klug 750*. Nazarete, *Osgood 18, 21*. "Amazonas," *Ule 5127a*. Yurimaguas, 135 meters, dense forest, *Killip & Smith 27695*. Between Yurimaguas and Balsapuerto, *Killip & Smith 28135*.—San Martín: Zepelacio, *Klug 3315*. Also in Amazonian Brazil.

Palicourea subspicata Huber, Bol. Mus. Paraense 4: 613. 1906.

A shrub or small tree 1-7.5 meters high, glabrous outside the inflorescence; stipules 5 mm. long, bilobate, the lobes very obtuse; leaves large, petiolate, green or blackish when dried, the blades membranaceous, elliptic to ovate, mostly 20-25 cm. long, acute or short-acuminate; inflorescence long-pedunculate, spike-like or raceme-like, elongate, puberulent, the flowers pedicellate; calyx shallowly dentate, the lobes broad, erose; corolla variously described as orange, scarlet, or pink, sparsely puberulent, 15 mm. long.

Junín: Puerto Yessup, 400 meters, dense forest, *Killip & Smith 26259*.—Loreto: Cerro de Chanchahuaya, *Huber 1415*, type (photo. and fragm. seen ex hb. Pará). Recreo, in forest, *Williams 4000, 3927*. Between Yurimaguas and Balsapuerto, 150 meters, dense forest, *Killip & Smith 28102*. Mouth of Río Santiago, *Mexia 6192a*.—San Martín: Pongo de Cainarachi, *Klug 2645, 2766*. Amazonian Brazil.

The species is set apart from all others by its narrow, elongate inflorescence.

Palicourea sulphurea (R. & P.) DC. Prodr. 4: 528. 1830. *Psychotria sulphurea* R. & P. Fl. 2: 58. pl. 205, f. a. 1799.

A shrub, glabrous throughout or nearly so; stipules 6-10 mm. long, shallowly bilobate, the lobes rounded; leaves petiolate, coriaceous, yellowish green when dried, the blades broadly obovate, acute or abruptly short-acuminate, about 13 cm. long and 8 cm. wide; panicles ovoid-pyramidal, large, open, the flowers short-pedicellate or sessile; calyx lobes minute, rounded; corolla yellow, 8 mm. long; fruit blackish. Neg. 532.

Huánuco: Described from Pillao and Iscutuna, *Ruiz & Pavón* (photo. and fragm. seen, ex hb. Berol.) Pampayacu, 1,050 meters, 5108.

Palicourea triphylla DC. Prodr. 4: 526. 1830. *P. stenostachys* Krause, Bot. Jahrb. 40: 340. 1908.

A low shrub, usually about 1 meter high, the branches terete, glabrous or sparsely puberulent; stipule lobes linear-attenuate, about 6 mm. long; leaves ternate, almost sessile, yellowish when dried, often subcoriaceous, oblong or lance-oblong, long-acuminate, puberulent, especially beneath, or finally glabrate; inflorescence long-pedunculate, thyrsoïd-paniculate, often somewhat elongate, dense and many-flowered, short-pilose; calyx lobes obtuse; corolla fúr-

furaceous-puberulent, yellow, 12–15 mm. long; fruit black. Negs. 639, 6668.

Junín: La Merced, 600 meters, granitic cliff, 5332. Chanchamayo Valley, 1,200 meters, *Schunke* 337. Puerto Bermúdez, 375 meters, dense forest, *Killip & Smith* 26407.—Loreto: Santa Ana, *Williams* 1237. Palta-cocha, in forest, *Williams* 790, 1263.—San Martín: Type of *P. stenostachys* from open thickets near Moyobamba, 900 meters, *Weberbauer* 4474; photo. and fragm. seen, ex hb. Berol. Moyobamba, *Mathews* in 1838. San Roque, *Williams* 7276. Tarapoto, *Williams* 5980. Lamas, *Williams* 6388. Widely distributed in tropical America.

Easily distinguished by the ternate leaves, although all the leaves on some specimens may be opposite.

Palicourea Weberbaueri Krause, Bot. Jahrb. 54: Beibl. 119: 40. 1916.

A shrub 2–4 meters high, with glabrous branches; stipule sheath 3 mm. long, the setiform lobes 4–5 mm. long; leaves short-petiolate, blackish or brownish when dried, subcoriaceous, the blades ovate or ovate-lanceolate, 6–10 cm. long, 3–4.5 cm. wide, acuminate, short-pilose beneath on the veins; inflorescence pyramidal-corymbiform, 5–8 cm. long, pedunculate, dense, the branches glabrous or nearly so, the flowers pedicellate; calyx lobes minute, ovate, acute; corolla greenish blue, 9–12 mm. long, glabrous. Neg. 652.

Piura: Western slopes of the Andes above Palambla, 2,700 meters, *Weberbauer* 6042, type collection.

74. **PAEDERIA L.**

Suffrutescent vines, ill-scented; stipules broad, truncate, connate with the petioles; leaves opposite, long-petiolate, membranaceous; flowers small, cymose-paniculate, axillary and terminal, 5-parted; calyx 5-dentate or 5-parted, persistent, the lobes equal or unequal; corolla tubular, villous in the throat, the short lobes recurved, valvate in bud; stamens inserted in the corolla throat, with short filaments; fruit 2-celled, dry, compressed, the thin epicarp separating from the 1-seeded nutlets.

Paederia diffusa (Britton) Standl. Field Mus. Bot. 7: 330. 1931. *Lygodisodea foetida* R. & P. Fl. 2: 48. pl. 188. 1799, non *P. foetida* L. 1767. *Disodea foetida* Pers. Syn. Pl. 1: 210. 1805. *Manettia diffusa* Britton, Bull. Torrey Club 18: 107. 1891. *P. olens* Schum. in E. & P.

Nat. Pfl. 4. Abt. 4: 125. 1897. *Poederiopsis diffusa* Rusby, Bull. N. Y. Bot. Gard. 4: 373. 1907.

A large, more or less woody vine, nearly glabrous; leaves on long, slender petioles, the blades elliptic-ovate to ovate-oblong, 5.5–10 cm. long, acuminate, acute to cordate at the base; corolla deep purple or reddish, 6–8 mm. long; calyx lobes ovate, acutish; fruit oblong to elliptic, 10–13 mm. long.

Cuzco: San Miguel, Urubamba Valley, 1,800 meters, *Cook & Gilbert 1155*.—Huánuco: Type material of *L. foetida* from Muña and Posuso, *Ruiz & Pavón*. Muña, 2,100 meters, *3995*.—Junín: La Merced, 600 meters, in hedgerows on sandy flat, *5316*; *Killip & Smith 23460, 24054*. Also in Bolivia and Argentina.

Ruiz and Pavón give the vernacular name as “yurahuanium,” and state that the tough stems were used as a substitute for rope and twine. The vernacular names “bejuco hediondo” and “bejuco blanco” also are reported.

75. CORYNULA Hook. f.

Slender perennial herbs with opposite leaves; stipules 3–5-lobate; flowers axillary, pedicellate; hypanthium turbinate; calyx 5-parted, the lobes subulate-lanceolate, unequal; corolla narrowly funnelform, glabrous in the throat, the 5 lobes short, erect, obtuse, valvate; stamens inserted in the base of the tube, the anthers exserted; fruit pyriform, coriaceous, 5-costate, finally separating into 2 one-seeded cocci.

Corynula pilosa (Benth.) Hook. f. in Hook. Icon. 12: 22. *pl. 1123*. 1876. *Mitchella pilosa* Benth. Pl. Hartw. 194. 1845.

Plants prostrate, branched, the slender branches pilose; leaves short-petiolate, the blades ovate to rounded-ovate, 6–12 mm. long, acute or acutish, abruptly contracted at the base, hispidulous beneath; pedicels solitary, longer than the petioles; corolla about 8 mm. long; fruit 4–5 mm. long, long-attenuate at the base, appressed-pilosulous.

Libertad: Río Mixiollo, *Weberbauer 7028*. Also in Bolivia and Ecuador.

76. GOMOZIA Mutis

Creeping, perennial herbs; stipules connate with the petioles into a sheath, bidentate or entire and triangular; leaves small, opposite; flowers minute, axillary, sessile; calyx truncate or dentate, persistent; corolla tubular or funnelform, glabrous in the throat, the 4

lobes valvate in bud; stamens inserted at the base of the corolla, the filaments filiform, the anthers exserted; fruit drupaceous, containing two 1-seeded nutlets.

Gomozia granadensis L. f. Suppl. 129. 1781. *Nertera depressa* Banks & Soland. ex Gaertn. Fruct. 1: 124. pl. 26. 1788. *N. repens* R. & P. Fl. 1: 60. pl. 90, f. b. 1798.

Plants small and slender, almost glabrous, forming dense, close mats on banks and logs, the stems much branched; leaves petiolate, the blades rather thick, mostly 5 mm. long or less, ovate to ovate-rounded, obtuse, puncticulate above; corolla white or greenish yellow; fruits bright red, juicy, 3-4 mm. long.

Ayacucho: Choimacota Valley, 3,000 meters, *Weberbauer* 7535. —Cuzco: Pillahuata, Cerro de Cusilluyoc, 2,300 meters, in forest, *Pennell* 13975. —Huánuco: Type material of *N. repens* from Huasahuasi and Muña, *Ruiz & Pavón*. Six miles south of Mito, 3,000 meters, wet slope, 1833. Huacachi, 1,950 meters, in forest, 4116. Widely distributed in the higher mountains of Central and South America.

The plant is a handsome one when in fruit, in appearance suggestive of the partridge-berry (*Mitchella repens*) of the United States.

77. EMMEORRHIZA Pohl

Perennials, more or less scandent, herbaceous or somewhat suffrutescent, the stems obtusely 4-angled; stipules united with the petioles to form a setiferous sheath; leaves more or less plicate-nerved; hypanthium turbinate; sepals 4, almost distinct; corolla short-funnelform, the 4 lobes valvate; stamens long-exserted; capsule 2-celled, coriaceous, the valves bifid at the apex; seeds spuriously winged by the adherent, spongy placenta.—The genus consists of a single variable species.

Emmeorrhiza umbellata (Spreng.) Schum. in Mart. Fl. Bras. 6, pt. 6: 408. 1889. *Borreria umbellata* Spreng. Neue Entd. 2: 144. 1821. *Endlicheria umbellata* Schum. in Mart. Fl. Bras. 6, pt. 6: 38. pl. 74. 1888.

A slender vine as much as 2 meters long with elongate branches, the stems glabrous or puberulent; leaves oblong-lanceolate to elliptic, 4.5-10 cm. long, acuminate, attenuate at the base to a short petiole, yellowish green, glabrous or pubescent; inflorescence a large, somewhat leafy panicle, the flowers in small, many-flowered umbels;

sepals ovate-triangular or subulate; corolla white, 1-2 mm. long; capsule obconic, glabrous or pubescent, 1.5-3 mm. long.

Ayacucho: Carrapa, 1,200 meters, wooded hillside, *Killip & Smith 22444*.—Huánuco: Cuschi, 1,500 meters, sunny edge of montaña along stream, 4839.—Junín: La Merced, 600 meters, shaded river cliff, 6348; *Killip & Smith 23799, 23671*. Above San Ramón, 1,400-1,700 meters, *Killip & Smith 24564*. Huacapistana, 1,800-2,400 meters, *Killip & Smith 24158*. Chanchamayo Valley, 1,200 meters, *Schunke 155, 156, 1623*. Chanchamayo, *Martinet 1450*. Eneñas, 1,700 meters, *Killip & Smith 25779*. Colonia Perené, 680 meters, in thickets, *Killip & Smith 25010*.—San Martín: Tarapoto, *Spruce 4572*. Bolivia and Argentina to Brazil and Colombia.

The plant may be recognized at once by its umbellate flowers and scandent habit.

78. MITRACARPUS Zucc.

Annual or perennial herbs; stipules united with the petioles to form a setiferous sheath; leaves opposite, commonly narrow; flowers minute or small, in terminal or axillary heads, 4-parted; sepals 4, unequal, connate below; corolla funnelform, the lobes valvate in bud; stamens included or subexserted, inserted in the mouth of the corolla; fruit 2-celled, transversely or obliquely circumscissile.

Plants perennial; corolla much longer than the calyx. *M. frigidus*.

Plants annual; corolla not exceeding the calyx. *M. hirtus*.

Mitracarpus frigidus (Willd.) Schum. in Mart. Fl. Bras. 6, pt. 6: 81. 1888. *Spermacoce frigida* Willd. ex R. & S. Syst. Veg. 3: 531. 1818.

A stout perennial, often much branched, the quadrangular stems puberulent or hispidulous; leaves short-petiolate or almost sessile, lanceolate or lance-oblong, acute or acuminate, acute at the base, pubescent, conspicuously nerved; flowers white, in very dense, rounded, sessile, axillary and terminal heads. Neg. 909.

Cajamarca: Cutervo, *Raimondi 4149; Jelski 117*. Bolivia and Brazil to the Guianas and Colombia.

Mitracarpus hirtus (L.) DC. Prodr. 4: 572. 1830. *Spermacoce hirta* L. Sp. Pl. ed. 2. 148. 1762.

Plants annual, erect or ascending, simple or more often much branched, usually less than 50 cm. high, the branches puberulent or villous, slender; leaves subsessile, lanceolate to ovate-oblong, acute,

2–5 cm. long; flowers densely clustered in the leaf axils and at the ends of the branches; corolla white, 1–2 mm. long; capsule subglobose, bisulcate, short-pilose, 0.8 mm. long or less. Neg. 910.

Cuzco: Hacienda Chancamayo, *Herrera 2453b*.—Huánuco: Huánuco, 2,100 meters, stony slopes, *3204*.—Junín: Chanchamayo Valley, 1,200 meters, *Schunke 1449*.—Puno: Sandía, *Weberbauer 579*.—San Martín: Tarapoto, sandy soil, *Williams 6163*.—Without locality: *Weberbauer 6468*. Generally distributed in tropical America.

79. RICHARDIA L.

Erect or prostrate annuals, usually with rough pubescence; stipules connate with the petioles into a setiferous sheath; leaves opposite; flowers small or rather large, densely crowded in terminal involucrate heads; ovary 3–4-parted; sepals 4–6, more or less connate at the base; corolla funnelform, the lobes valvate in bud; fruit consisting of 3–4 indehiscent 1-seeded cocci.

Carpels of the fruit 4; sepals 4.

Bracts of the involucre linear, coriaceous, with strongly revolute margins..... *R. rigidifolia*.

Bracts ovate, herbaceous, not or scarcely revolute... *R. humistrata*.
Carpels 3; sepals 6.

Fruit not muriculate; corolla pink..... *R. rosea*.

Fruit muriculate.

Carpels acutely carinate on the inner face..... *R. lomensis*.

Carpels sulcate on the inner face..... *R. scabra*.

Richardia humistrata (C. & S.) Steud. Nom. Bot. ed. 2. 2: 459. 1841. *Richardsonia humistrata* C. & S. Linnaea 3: 353. 1828.

Plants apparently perennial, with short, repent branches from the base, the stems spreading-pilose; leaves lanceolate or oblong-lanceolate, 10–17 mm. long, acute, appressed-villous; bracts broadly ovate; sepals ovate-triangular, acute; corolla 2 mm. long, hirsute; carpels plane on the inner face, 2–3 mm. long.

Cajamarca: Cutervo, *Raimondi 5689*. Also in Brazil and Uruguay.

Richardia lomensis (Krause) Standl. Field Mus. Bot. 8: 386. 1931. *Richardsonia lomensis* Krause, Bot. Jahrb. 40: 348. 1908.

A low annual 2–5 cm. high, hispid throughout; leaves ovate or ovate-oblong, 1–2.5 cm. long, acuminate, contracted at the base

into a short petiole; heads few-flowered; sepals oblong, acute; corolla white, glabrous outside, 4-4.5 mm. long; carpels 4 mm. long, incised at the base. Neg. 855.

Arequipa: Mollendo, in sandy places, 100 meters, *Weberbauer 1542* (photo. and fragm. of type seen, ex hb. Berol.).

Richardia rigidifolia (Krause) Standl. Field Mus. Bot. 8: 386. 1931. *Richardsonia rigidifolia* Krause, Notizbl. Bot. Gart. Berlin 8: 103. 1922.

A low perennial, densely branched from the base, the stems hispidulous or glabrate; leaves coriaceous, linear or linear-lanceolate, 12-18 mm. long; heads few-flowered; corolla greenish yellow, 3-4 mm. long; carpels normally 4, smooth and glabrous. Neg. 854.

Ayacucho: Ayacucho, on rocky cliffs, 3,100 meters, *Weberbauer 5502* (photo. and fragm. of type seen, ex hb. Berol.).—Junín: Mountains east of Palca, 2,800 meters, *Weberbauer 2437*.

Richardia rosea (St. Hil.) Schult. f. Syst. Veg. 7: 88. 1829. *Richardsonia rosea* St. Hil. Pl. Usu. pl. 7. 1824.

A prostrate annual, villous or pilose throughout; leaves oblong-lanceolate to oval, 2-5 cm. long, acute, attenuate to the base and contracted into a short petiole; heads dense, subtended by 2 or 4 bracts; sepals subulate; corolla 5-6 mm. long, hirsute; carpels pilose, 4 mm. long. Neg. 849.

Cuzco: Hacienda Chancamayo, *Herrera 2454a*. Also in Brazil and Argentina.

Richardia scabra L. Sp. Pl. 330. 1753. *R. pilosa* R. & P. Fl. 3: 50. 1802. *Richardsonia scabra* St. Hil. Pl. Usu. pl. 8. 1824.

A prostrate or ascending annual, often forming mats, pilose or hispid throughout; leaves petiolate, the blades oblong or lanceolate, 2-9 cm. long, acute and mucronate; heads dense and few- or many-flowered; sepals lanceolate; corolla 4-6 mm. long; carpels 2-3 mm. long.

The species is a widely distributed weed of tropical America. I have seen no Peruvian specimens, but it is included here on the authority of Schumann, who referred *Richardia pilosa* to its synonymy. That species of Ruiz and Pavón was described from Cercado, Huánuco, Chancay, and Lima. If it was found by those early collectors at so many stations, it is strange that it has not been rediscovered in recent years.

80. DIODIA L.

Annual or perennial herbs, sometimes suffrutescent at the base; stipules united with the petioles to form a setiferous sheath; leaves opposite, usually small and narrow; flowers minute or small, axillary or in spicate or cymose inflorescences; sepals 2 or 4, equal or unequal; corolla funnelform, 4-lobate, the lobes valvate; stamens inserted in the mouth or throat of the corolla, the anthers dorsifixed; fruit of 2 carpels, indehiscent, the carpels usually separating from the persistent column, membranaceous to woody.

Flowers all axillary.

Stems glabrous or finely puberulent; leaves glabrous except on or near the margins; fruit puberulent at the apex.

D. hyssopifolia.

Stems hirsute or pilose; leaves densely scabrous; fruit usually hispid or hispidulous..... *D. teres*.

Flowers arranged in cymes or elongate spikes.

Flowers in few-flowered clusters, these arranged in cymes.

D. dichotoma.

Flowers in dense heads, these forming interrupted spikes.

D. alata.

Diodia alata Nees & Mart. Act. Soc. Nat. Cur. 12: 12. 1824.
D. palustris C. & S. Linnaea 3: 347. 1828.

A creeping perennial, nearly glabrous, the stout stems rooting, 4-angled and more or less winged on the angles; leaves subsessile, ovate or elliptic to suborbicular, acutish, nearly glabrous above, aculeolate beneath on the prominent nerves; flower heads sessile or short-pedunculate, large and many-flowered, globose; corolla white, 1.5-2 mm. long; capsule glabrous, 1.5 mm. long. Neg. 6690.

Cuzco: Cosñipata, 1,400 meters, *Weberbauer 6941*. Also in Brazil and Colombia, growing usually in wet soil.

Diodia polymorpha C. & S. var. *microphylla* C. & S. is reported from Peru by Schumann (in Mart. Fl. Bras. 6, pt. 6: 12. 1888), but the record evidently is based upon a specimen from eastern Brazil.

Diodia dichotoma (HBK.) Schum. in Mart. Fl. Bras. 6, pt. 6: 11. 1888. *Spermacoce dichotoma* HBK. Nov. Gen. & Sp. 3: 348. 1819. *D. glabra* Willd. ex R. & S. Syst. Veg. 3: 532. 1818, non Pers. 1805. *Borreria dichotoma* C. & S. Linnaea 3: 340. 1828. *Triodon laxum* Spruce ex Schum. loc. cit. in syn.

Plants small, erect, suffrutescent, usually less than 30 cm. high, the stems branched, glabrous; leaves lanceolate or oblong-lanceolate, 1–2 cm. long, acuminate, mucronate, scabrous above, especially toward the margin, pilosulous beneath on the veins or glabrous; cymes trichotomous; sepals 2; corolla 2 mm. long; capsule glabrate. Neg. 862.

Amazonas: Chachapoyas, *Mathews* 1502.—Cajamarca: Cutervo, *Raimondi* 3745.—Piura: Ayavaca, *Humboldt & Bonpland* (photo. of type, ex hb. Berol., seen). Ranging to Ecuador.

Schumann (in Mart. Fl. Bras. 6, pt. 6: 11. 1888) reports *Spruce* 5997 from "Peruvia orientali." The specimen of this number that I have seen is labeled as having been collected in the Andes of Ecuador.

Diodia hyssopifolia (Willd.) C. & S. *Linnaea* 3: 350. 1828. *Spermacoce hyssopifolia* Willd. ex R. & S. *Syst. Veg.* 3: 532. 1819.

An erect perennial 60 cm. high or less, often densely branched, sometimes suffrutescent below; stems dark ferruginous; leaves linear, 2–5 cm. long, acuminate, attenuate at the base, the margins often revolute; flowers densely clustered in the leaf axils; hypanthium pilosulous near the apex; sepals 4, subulate, acute; corolla white, 3–4 mm. long; capsule 3–4 mm. long. Negs. 6733, 864.

Loreto: Banks of the Río Itaya above Iquitos, 110 meters, *Killip & Smith* 29402. Extending to Brazil, the Guianas, and Colombia.

Diodia teres Walt. Fl. Carol. 87. 1788. *D. prostrata* Sw. Prodr. Fl. Ind. Occ. 30. 1788.

An erect annual, the stems simple or branched, usually less than 50 cm. high; leaves linear or lance-linear, 1.5–4.5 cm. long, thick-margined, acuminate, distant, spreading or ascending; flowers axillary, solitary or geminate, sessile or nearly so; sepals unequal; corolla 3–4 mm. long, white or pink; fruit 3 mm. long, the carpels rounded on the back.

Piura: Serrán, southeast of Piura, *Weberbauer* 5987, 5979. Ranging northward to the United States; common in many parts of tropical America, usually in savannas or grassland.

81. HEMIDIODIA Schum.

Perennial herbs, sometimes suffrutescent at the base; stipules united with the petioles into a setiferous sheath; leaves opposite; flowers clustered in the leaf axils, sessile; sepals 4, equal, connate at

the base; corolla funnelform, the 4 lobes valvate; stamens inserted in the mouth of the corolla, exserted; fruit of 2 carpels, these separating from the central septum, opening near the base.—The genus consists of a single species.

Hemidiodia ocimifolia (Willd.) Schum. in Mart. Fl. Bras. 6, pt. 6: 29. 1888. *Spermacoce ocimifolia* Willd. ex R. & S. Syst. Veg. 3: 530. 1818.

Stems often much elongate, decumbent or ascending, sparsely puberulent or glabrate; leaves petiolate, lanceolate or lance-oblong, 3-5 cm. long or larger, acuminate, puberulent or glabrate, scabrous on the margins, often plicate-nerved; flowers in dense, axillary clusters; sepals ovate, acute, 0.5 mm. long; corolla white or bluish, glabrous, 3-4 mm. long; fruit 3-4 mm. long, puberulent or glabrous. Negs. 6713, 6738.

Cajamarca: Prov. Cantumasa, *Raimondi* 7526.—Loreto: near Iquitos, *Williams* 1370. Pebas, in forest, *Williams* 1952, 1581. Río Itaya, *Williams* 37, 196, 157. Paraíso, Alto Itaya, *Williams* 3206.—San Martín: San Roque, in forest, *Williams* 7191, 7166, 7094. Lamas, *Williams* 6366. Widely distributed in tropical America.

The plant is a common weed in many parts of the lowlands of tropical America, often growing abundantly in cultivated ground.

82. SPERMACOCE L.

Erect or ascending annuals; stipules connate with the petioles into a setiferous sheath; leaves opposite, herbaceous; flowers minute, densely clustered in the leaf axils, 4-parted; sepals short-connate; corolla funnelform, the lobes valvate in bud; stamens attached at the base of the corolla tube, the anthers versatile; fruit dry, of 2 one-seeded carpels, these coherent by the base, one carpel opening, the other remaining closed.

Capsule glabrous; leaves glabrous on the upper surface or scabrous only on the margins.....*S. glabra*.

Capsule pubescent; leaves scabrous on the upper surface. *S. confusa*.

Spermacoce glabra Michx. Fl. Bor. Amer. 1: 82. 1803.

Plants simple or branched, erect to procumbent, the stems glabrous; leaves short-petiolate, lanceolate or linear-lanceolate, 3-6 cm. long, acuminate; inflorescences many-flowered, one-sided; sepals

triangular, 1 mm. long; corolla white, 2 mm. long; capsule obovoid, 3 mm. long.

Lima: Lima, dry places, in 1862, *Nation*.—Piura: Serrán, 250 meters, *Weberbauer 5987*. Widely distributed in tropical America, extending northward to the southeastern United States.

Spermacoce confusa Rendle, *Journ. Bot.* 74: 12. 1936. *Spermacoce tenuior* Auct., non L.

Plants erect or spreading, 60 cm. high or less, often much branched, the stems scabrous, hispidulous, or sometimes glabrous; leaves ovate-lanceolate to linear-lanceolate, 2–7 cm. long, acuminate, scaberulous beneath; inflorescences several-flowered; sepals ovate-triangular; corolla white or purplish, glabrous; capsule subglobose, 2 mm. long.

Amazonas: Chachapoyas, *Mathews*.—Huánuco: Huánuco, 2,100 meters, shale and gravel slopes, *3219*. Generally distributed in tropical America as a weed.

83. BORRERIA G. Mey.

Plants low, annual or perennial, sometimes suffrutescent, erect or prostrate; stipules connate with the petioles into a setiferous sheath; leaves often plicate-nerved, opposite; flowers small, usually sessile in the leaf axils or in terminal heads; sepals 2 or 4, equal or unequal, often with interposed teeth; corolla funnelform, 4-lobate; stamens usually attached in the throat of the corolla; fruit a coriaceous or membranaceous capsule, 2-celled, the cells septicial; seed one in each cell.

Inflorescence cymose, composed of few stalked heads. *B. corymbosa*.

Inflorescence of simple, bracted heads, or the flowers densely clustered in the leaf axils.

Stigma bifid at the apex; plants bright yellowish green when dried.

Flowers appearing verticillate in the leaf axils. . . . *B. latifolia*.

Flowers not verticillate, crowded in unilateral clusters subtended by 4 large leaves. *B. alata*.

Stigma capitate; plants not yellow-green when dried.

Flower clusters small, about 5 mm. in diameter; a slender annual.

B. ocimoides.

Flower clusters large, mostly 8–15 mm. in diameter; plants usually perennial.

Sepals minute, broadly triangular; leaves mostly ovate or oblong-ovate. Seeds transverse-sulcate. *B. laevis*.

Sepals elongate, linear-subulate; leaves mostly linear to narrowly lanceolate.

Seeds transversely sulcate; plants usually copiously pubescent. *B. capitata*.

Seeds not transversely sulcate; plants commonly almost glabrous. *B. suaveolens*.

Borreria alata (Aubl.) DC. Prodr. 4: 544. 1830. *Spermacoce alata* Aubl. Pl. Guian. 1: 60. pl. 22, f. 7. 1775.

Plants yellow-green, much branched, prostrate and rooting, the stout branches 4-angled and more or less winged on the angles, ciliate on the wings or glabrate; leaf blades elliptic to ovate, 2-4 cm. long, rather thick, conspicuously nerved; flower clusters about 1 cm. in diameter; sepals as long as the hypanthium, oblong or oblong-lanceolate, acute; corolla 4 mm. long; capsule 2 mm. long.

Loreto: Near Iquitos, a weed in pasture, *Williams 1487*. Caballococha, on the Amazon, in forest, *Williams 2033*. Río Itaya, *Williams 139*. Also in Brazil and the Guianas.

Borreria capitata (R. & P.) DC. Prodr. 4: 545. 1830. *Spermacoce capitata* R. & P. Fl. 1: 61. pl. 91, f. b. 1798.

A coarse erect perennial, 1 meter high or less, usually much branched, the branches pubescent or tomentose; leaves mostly 3-10 cm. long, acute or acuminate, acute at the sessile base, scaberulous above, puberulent or short-pilose beneath, plicate-nerved; flowers densely crowded in large, terminal and axillary heads 8-16 mm. in diameter; sepals subulate, ciliate, equaling the hypanthium; corolla white or pinkish, 2-6 mm. long; capsule about 2 mm. long. Neg. 25583.

Huánuco: Type from Pillao and Iscutuna, *Ruiz & Pavón* (authentic material seen, ex hb. Berol.)—Junín: Chanchamayo Valley, 1,200-1,500 meters, *Schunke 1574, 434, 359*. San Ramón, open hillside, 900-1,300 meters, *Killip & Smith 24787*. Widely distributed in South America.

Called "poaya" and "poaya do campo" in Brazil, and said to be used there sometimes as a substitute for ipecac.

Borreria corymbosa (R. & P.) DC. Prodr. 4: 550. 1830. *Spermacoce corymbosa* R. & P. Fl. 1: 60. pl. 91, f. a. 1798. *S. peruviana*

Pers. Syn. Pl. 1: 124. 1805. *Bigelowia corymbosa* Bartl. ex DC. loc. cit., as syn. *Hedyotis spermacoea* Dombey ex DC. loc. cit., as syn.

Plants erect, suffrutescent, stiff, 60 cm. high or less, the branches glabrous; leaves linear or linear-lanceolate, 1–2 cm. long, acute at each end, somewhat coriaceous, with revolute margins; flower heads about 6–8 mm. in diameter, the flowers sessile or short-pedicellate; sepals triangular, half as long as the hypanthium; corolla white, 2–3 mm. long, villous in the throat; capsule glabrous, obovoid or turbinate, 2 mm. long. Neg. 873.

Huánuco: Originally described from Muña, Cormilla, and Rinconada, Ruiz & Pavón. Tambillo, 2,400 meters, rocky grassy slope, 3574. Also in Brazil, Argentina, and Bolivia.

Schumann (in Mart. Fl. Bras. 6, pt. 6: 70. 1888) reports from Peru a closely related species, *B. centranthoides* C. & S., but his report is based upon a Bolivian specimen.

Borreria laevis (Lam.) Griseb. Goett. Abh. 7: 231. 1857. *Spermacoe laevis* Lam. Ill. 1: 273. 1791. *S. assurgens* R. & P. Fl. 1: 60. pl. 92, f. c. 1798.

Plants herbaceous, annual or sometimes perennial, erect or ascending, usually less than 60 cm. high, the branches glabrous or puberulent on the angles; leaves herbaceous, mostly 2.5–5 cm. long, acute or acuminate, abruptly decurrent at the base into a long, slender petiole, more or less pilose, especially on the nerves, or glabrate; flower heads sessile, terminal and axillary, the terminal ones subtended by large leaves; hypanthium puberulent at the apex; corolla white, 2–2.5 mm. long; capsule 2 mm. long, the calyx lobes obscure at maturity; seeds castaneous. Negs. 886, 6700.

Cuzco: Valle Lares, Diehl 2403d.—Junín: Río Pinedo, north of La Merced, in clearing, 800 meters, Killip & Smith 23595. Chanchamayo Valley, 1,200 meters, Schunke 377.—Libertad: Trujillo, roadside, Killip & Smith 21506.—Lima: *S. assurgens* was described from Lima, Chancay, and Huánuco, Ruiz & Pavón. Lima, in 1852, Andersson. Santa Clara, Rose 18728.—Loreto: Recreo, Yurimaguas, in chacara, Williams 4157. Above Pongo de Manseriche, Mexia 6362. Río Putumayo, Klug 1643. Santa Rosa, Yurimaguas, in pasture, Williams 4835.—Tumbes: Plain east of Hacienda La Chozza, 100–200 meters, Weberbauer 7702.—San Martín: Zepelacio, Klug 3327. Distributed almost throughout tropical America.

The species is one of the most common weeds of many parts of the tropical American lowlands. Killip reports that the plant is

crushed with a composite and applied to cuts as an aid in healing them.

Borreria latifolia (Aubl.) Schum. in Mart. Fl. Bras. 6, pt. 6: 61. pl. 80. 1888. *Spermacoce latifolia* Aubl. Pl. Guian. 55. pl. 19, f. 1. 1775.

Plants perennial, herbaceous or suffrutescent, prostrate or ascending, often much branched, conspicuously yellowish when dried, the stout branches 4-angled and often narrowly winged above, glabrous or pubescent on the angles; leaves thick, elliptic to oblong, nearly sessile, 3.5-7 cm. long, acute or acuminate, acute at the base, more or less scaberulous or puberulent, at least on the nerves; hypanthium glabrous or pilose; sepals ovate-lanceolate, acute, ciliate, 2 mm. long; corolla white or blue, 4-6 mm. long; capsule 3 mm. long. "Siuca blanca," "gallinazo," "carmelo." Negs. 6694, 6691.

Loreto: Nauta(?), *Raimondi* 2171. Iquitos, 120 meters, *Williams* 8090; *Killip & Smith* 27014. Nanay Hills, *Williams* 265. Mishuyacu, in clearing, *Klug* 185, 332. La Victoria, on the Amazon, *Williams* 2574. Widely distributed in tropical America.

Borreria ocimoides (Burm.) DC. Prodr. 4: 544. 1830. *Spermacoce ocimoides* Burm. Fl. Ind. 34. pl. 13, f. 1. 1768. *S. gracilis* R. & P. Fl. 1: 61. pl. 92, f. a. 1798.

Plants slender, usually much branched, sometimes 60 cm. high but often 10 cm. high or less, erect to prostrate, the stems glabrous or puberulent on the angles; leaves elliptic to linear-lanceolate, 1-3 cm. long, acute, attenuate at the base to a short petiole or sessile, glabrous or somewhat scabrous near the margins; hypanthium minute, glabrous or puberulent; sepals about equaling the hypanthium, subulate; corolla white, shorter than the calyx; capsule scarcely 1 mm. in diameter.

Huánuco: Type of *S. gracilis* from Huánuco, *Ruiz & Pavón*.—Junín: La Merced, 1,200 meters, a weed in garden, 5672. East of Quimiri Bridge, near La Merced, in clearing, *Killip & Smith* 23968. Near Perené Bridge, Paucartambo Valley, 700 meters, moist bank, *Killip & Smith* 25384. Yapas, 1,400 meters, *Killip & Smith* 25596. —Loreto: La Victoria, on the Amazon, in pasture, *Williams* 2648. Río Itaya, *Williams* 239. Yurimaguas, edge of forest, *Williams* 4099. Río Mazán near Iquitos, *Williams* 8127. Mishuyacu, 100 meters, *Klug* 525.—San Martín: Tarapoto, *Williams* 5878. San

Roque, 1,400 meters, *Williams* 7444, 7454. Generally distributed as a weed in the lowlands of tropical America.

Borreria suaveolens G. Mey. Prim. Fl. Esseq. 81. pl. 1. 1818. *Spermacoce tenella* HBK. Nov. Gen. & Sp. 3: 345. 1819. *B. tenella* C. & S. Linnaea 3: 317. 1828.

Plants perennial, erect to procumbent, usually much branched, 1 meter high or less, the older stems usually ferruginous, often somewhat woody, the younger ones usually glabrous; leaves sessile, acute or acuminate, often revolute, 2–8 cm. long, glabrous or scabrous, sometimes sparsely pilose; flower heads 8–12 mm. thick, mostly terminal and subtended by leaves; hypanthium villosulous; sepals longer than the hypanthium, ciliate; corolla white, 2.5–5 mm. long; capsule oblong, pubescent at the apex, 2 mm. long. Negs. 6697, 6702, 887.

Amazonas: Chachapoyas, 2,700 meters, a common weed, *Williams* 7567. Between Levanto and Suta, *Raimondi* 450.—Ayacucho: Aina, 800 meters, *Killip & Smith* 23173.—Huánuco: Panao, 2,700 meters, grassy slopes, 3611.—Junín: Chanchamayo Valley, 1,200 meters, *Schunke* 1407.—San Martín: Lamas, 840 meters, *Williams* 6367, 6443. Mt. Moro, Moyobamba, *Weberbauer* 4592. Zepelacio, 1,200–1,600 meters, *Klug* 3359. Widely distributed in tropical America, usually at middle or higher elevations.

Spermacoce erioclada DC. Prodr. 4: 557. 1830. *S. scaberrima* Bartl. ex DC. loc. cit. in syn.

Plants ascending, suffrutescent, the stems hirsute-tomentose; leaves oblong, scabrous; flower heads terminal; calyx lobes 4; stamens exserted.

Described from Peru. Probably a *Borreria*, and perhaps a synonym of *B. capitata*; at least the description indicates no distinguishing characters. *S. erioclada* var. *linearifolia* DC. loc. cit., described from Peru, is a form with linear leaves.

Spermacoce inconspicua Bartl. ex DC. Prodr. 4: 557. 1830.

Suffrutescent; stems glabrous below, pulverulent above; leaves linear-oblong, glabrous, the margin scabrous; flower heads terminal; calyx lobes 4, acuminate.

Type from the mountains of Peru. Doubtless a *Borreria*; perhaps a synonym of *B. suaveolens*.

84. *SHERARDIA* L.

Small annuals; leaves verticillate, narrow; flowers small, subsessile, in terminal and axillary, involucrate heads; calyx segments 4-6, persistent; corolla funnellform, the tube equaling or longer than the lobes; stamens inserted in the tube, the anthers exerted; fruit 2-celled, didymous, the carpels indehiscent.

Sherardia arvensis L. Sp. Pl. 102. 1753.

Stems hispidulous, short or elongate and branched; leaves in whorls of 4-6, obovate to lanceolate or linear, acute and mucronate, 6-15 mm. long, ciliate; flower heads pedunculate; corolla pink or bluish.

Junín: Ocopa, rocky stream bed, 3,300 meters, *Killip & Smith* 21997. Native of Europe, but sometimes naturalized in America.

85. *RELBUNUM* Hook. f.

Annual or perennial herbs, resembling *Galium* in habit; leaves verticillate; flowers minute, the pedicel articulate with the involucre, this consisting of 2-4 leaf-like bracts; ovary didymous; sepals none; corolla rotate, 4-lobate, the lobes valvate in bud; stamens exerted; fruit more or less fleshy and juicy, smooth or tuberculate, usually 2-seeded.

Involucre of only 2 bracts. Ovary hispid *R. ericoides*.

Involucre of 4 bracts.

Fruit and ovary pilose *R. hypocarpium*.

Fruit and ovary glabrous.

Leaves oval to orbicular, 3-10 mm. wide, 3-nerved . . . *R. ovale*.

Leaves linear or oblong, less than 3 mm. wide, 1-nerved.

Stems glabrous *R. ciliatum*.

Stems puberulent or pilose.

Stems puberulent or scaberulous; leaves merely ciliate.

R. croceum.

Stems pilose; leaves often pilose as well as ciliate.

Plants 5 cm. high or less, dense, compactly branched; leaves merely ciliate *R. corymbosum*.

Plants with elongate, slender branches; leaves usually pilose on the surfaces as well as ciliate . . *R. hirsutum*.

Relbunium ciliatum (R. & P.) Hemsl. Biol. Centr. Amer. Bot. 2: 62. 1881. *Galium ciliatum* R. & P. Fl. 1: 59. 1798. *Rubia ciliata* DC. Prodr. 4: 591. 1830. *Rubia monantha* DC. loc. cit. *G. monanthon* Bartl. ex DC. loc. cit. in syn. *Relbunium tarmense* Krause, Bot. Jahrb. 40: 351. 1908.

Plants low and densely branched, the slender stems glabrous; leaves in 4's, oblong or linear, mostly 3-4 cm. long, usually ciliate, mucronate-acute; corolla greenish yellow; flowers axillary and solitary; fruit glabrous, fleshy. Neg. 950.

Ancash: Hacienda Cajabamba, 3,700 meters, *Weberbauer 3060*.—Ayacucho: Ayacucho, *Weberbauer 5500*.—Cajamarca: Cutervo, *Raimondi 5682*.—Cuzco: Cuzco, in 1916, *Watkins; Weberbauer 4869*. Quebrada de Miscahuara, 3,350 meters, *Herrera 636*. Paucartambo Valley, 3,500 meters, *Herrera 1416a*. Pucará, 3,700 meters, *Weberbauer 430*.—Huánuco: Tambo de Vaca, 3,900 meters, wet mossy rocky uplands, *4359*.—Junín: Described from Tarma, Chancai, and Cheuchín, *Ruiz & Pavón*. Tarma, 2,100 meters, heavy stony soil, *1011*. Oroya, *Kalenborn 52*. Tarma, *Weberbauer 2408*, type of *R. tarmense*.—Lima: Obrajillo, *Wilkes Exped.* Antaicocha, 3,500 meters, sandy and gravelly stream wash, *Pennell 14629*. Matucana, 2,400 meters, rock crevices and loose shale slopes, *235; Savatier 400*.—Puno: Chuquibambilla, 3,900 meters, crevices of limestone rock, *Pennell 13407*. Ranging to Colombia and Chile.

In the synonymy of this species probably belong the following names: *Galium mucronatum* R. & P. Fl. 1: 60. 1798, non L. *G. apiculatum* R. & S. Syst. Veg. 3: 222. 1818, non Sibth. *G. leucocarpum* DC. Prodr. 4: 612. 1830. *Rubia mucronata* H. & A. Bot. Misc. 3: 363. 1833. *G. tarmense* Spreng. Syst. Veg. 1: 387. 1825. The type was collected at Tarma by Ruiz and Pavón. Schumann considered this and *R. ovale* as probably identical, but in the latter the leaves are oval, rather than linear, as described for *Galium mucronatum*. I have seen no material of the Ruiz and Pavón plant, and their description is far from satisfactory, hence it may be that the name refers to some species other than *Relbunium ciliatum*.

Relbunium corymbosum (R. & P.) Schum. in Mart. Fl. Bras. 6, pt. 6: 118. 1888. *Galium corymbosum* R. & P. Fl. 1: 59. 1798. *Rubia corymbosa* DC. Prodr. 4: 591. 1830.

Plants perennial, dwarf and compact, with slender, ascending branches, sometimes corymbosely branched; leaves lance-oblong to elliptic-oblong, minute, acute or obtuse, long-ciliate; flowers solitary,

the pedicels half as long as the leaves or shorter; fruit apparently white, glabrous.

Junín: Type from Bombóm in the mountains of Tarma, *Ruiz & Pavón*. Between Tarma and Jauja, 4,500 meters, *Killip & Smith* 21970. Cerro de Pasco, 4,200 meters, crevices of limestone outcrop, 3069.

It is rather doubtful whether this species, or at least the specimens here referred to it, differs essentially from *R. hirsutum*.

Relbunium croceum (R. & P.) Schum. in Mart. Fl. Bras. 6, pt. 6: 116. 1888. *Galium croceum* R. & P. Fl. 1: 59. 1798. *Rubia crocea* DC. Prodr. 4: 591. 1830. *G. chloranthum* Krause, Bot. Jahrb. 40: 351. 1908.

Plants perennial, the numerous short stems prostrate or ascending, densely leafy; leaves in 4's, linear or lance-oblong, subcoriaceous, usually scaberulous and ciliate; flowers solitary, short-pedicellate; corolla glabrous; fruit reddish yellow, glabrous. Neg. 941.

Huánuco: Originally described from Tarma, Huánuco, Rondos, and Nauyan, *Ruiz & Pavón*. Mito, 3,150 meters, grassy uplands, 1878, 1877.—Junín: Oroya, *Weberbauer* 2584, type of *R. chloranthum*.—Puno: Araranca, 4,200 meters, crevices of siliceous rock, *Pennell* 13469. Also in Bolivia.

This so-called species is not separated sharply from *R. hirsutum*, and probably should be treated as a form or variety of it.

Relbunium ericoides (Lam.) Schum. in Mart. Fl. Bras. 6, pt. 6: 109. 1888. *Galium ericoides* Lam. Encycl. 2: 583. 1788.

A rather stout perennial, erect or ascending, sometimes suffrutescent at the base, the stems short-pilose; leaves triangular-ovate, acuminate, 1.5–2.5 mm. long, glabrous or sparsely pilose; flowers axillary in 2's or 3's; corolla 1 mm. broad; fruit hirtous, 2 mm. broad.

Reported from Peru by Schumann, loc. cit., on the basis of a specimen collected by Haenke. Also in Brazil, Chile, and Uruguay.

The report of this species from Peru needs confirmation, and I am skeptical as to its occurrence in the country.

Relbunium hirsutum (R. & P.) Schum. in Mart. Fl. Bras. 6, pt. 6: 116. 1888. *Galium hirsutum* R. & P. Fl. 1: 59. 1798. *Rubia hirsuta* Schlecht. ex Wedd. Chlor. And. 2: 37. 1857, in syn.

A low perennial, the stems numerous, prostrate or ascending, usually 20 cm. long or less, short-pilose; leaves lanceolate to ovate-oblong, acute, mostly short-hirsute, subcoriaceous, blackish when

dried; flowers solitary in the leaf axils, equaling or shorter than the leaves; corolla greenish white; fruit glabrous, white. Neg. 943.

Arequipa: Mollendo, *Rose* 19485.—Ayacucho: Pampalca, 3,200 meters, *Killip & Smith* 23293, 22267.—Cajamarca: Chota, *Jelski* 5491. Montaña de Nanchó, 2,300 meters, *Raimondi* 3235. Cutervo, *Raimondi* 3044.—Huánuco: Huánuco, *Ruiz*. Mito, 2,700 meters, among grasses on shrubby slope, 1612. Puente de Esperanza, *Kanehira* 284.—Junín: La Oroya, 3,600 meters, limestone cliffs, 938; *Kalenborn* 52.—Lima: Lima, *Wilkes Exped.* Río Blanco, 3,600 meters, open, steep banks, 670; *Killip & Smith* 21551. Chicla, *Rose* 18684. Type from Cullnay and Obrajillo, *Ruiz & Pavón*.—Puno: Araranca: 4,200 meters, crevices of siliceous rock, *Pennell* 13468, 13469. Argentina to Colombia.

***Relbunium hypocarpium* (L.) Hemsl.** Biol. Centr. Amer. Bot. 2: 63. 1881. *Vaillantia hypocarpia* L. Syst. Nat. ed. 10. 1307. 1759.

A weak perennial with elongate stems sometimes as much as 1 meter long or more, sometimes subscandent, the branches retrorse-hispidulous; leaves in 4's, oblong to elliptic or obovate, 5–15 mm. long, mucronate, narrowed to the base, more or less pilose and ciliate, rather thick, the margins revolute; flowers pedicellate, equaling or shorter than the leaves; corolla white, 1–1.5 mm. broad; fruit orange-red, 2–3 mm. long. Neg. 6717.

Arequipa: Mollendo, *Hitchcock* 22380.—Cuzco: Valle de San Miguel, 2,400 meters, *Herrera* 2011. Without locality, *Herrera* 2536. Cerro de Cusilluyoc, 2,300 meters, in forest, *Pennell* 14018.—Huánuco: Cani, 2,550 meters, steep, open slope among shrubs, 3453. Mito, 2,700 meters, among shrubs, 1372. Pampayacu, *Kanehira* 87. Llata, 2,100 meters, 2285. Twelve miles south of Pano, 3,000 meters, moist, shady bank in forest, 2204.—Junín: Huacapistana, 1,800–2,400 meters, open hillside, *Killip & Smith* 24233. Above San Ramón, 1,300–1,700 meters, *Schunke* A16.—San Martín: San Roque, 1,400 meters, *Williams* 7381, 7455, 7698. Zepelacio, 1,200–1,600 meters, *Klug* 3276. Widely distributed in the mountains of tropical America, at middle or high elevations.

Known at Mito as “antanco,” and used there for dyeing cloth. The genus *Relbunium* is closely related to *Rubia* of the Old World, which furnishes madder dye.

***Relbunium ovale* (R. & P.) Schum.** in Mart. Fl. Bras. 6, pt. 6: 115. 1888. *Galium ovale* R. & P. Fl. 1: 59. 1798. *Rubia ovalis*

DC. Prodr. 4: 591. 1830. *Relbunium diffusum* Schum. op. cit. 111. 1888.

Plants large and rather coarse, much branched, the stems sometimes as much as 1 meter long, hirsute or glabrate; leaves in 4's, 5-20 mm. long, obtuse or mucronate, contracted at the base and short-petiolate, ciliate and pilose; flowers long-pedicellate, the foliaceous bracts 3-4 mm. long; corolla greenish, 1.5 mm. broad; fruit white, glabrous, 3 mm. broad.

Ayacucho: Aina, 750-1,000 meters, in clearing, *Killip & Smith 22617*.—Cajamarca: Chorrillos, *Raimondi 6870*.—Cuzco: Chaucapichaca, 1,700 meters, *Weberbauer 7827*. Matariata, 650 meters, *Bues 2869*.—Huánuco: Originally described from Chancay, Huánuco, and Lima, *Ruiz & Pavón*. Huánuco, *Ruiz* (fragm. ex hb. Berol.).—Junín: Chanchamayo Valley, 1,200 meters, *Schunke 1541*. Also in Bolivia, Brazil, and Argentina.

The plant is yellowish green when dried, specimens of other species usually turning blackish.

86. GALIUM L.

Annuals or perennials, herbaceous or suffrutescent, the stems 4-angled; leaves verticillate; flowers minute, 3-4-parted, arranged in axillary and terminal cymes, ebracteate, the calyx jointed with the pedicel; calyx obsolete; corolla rotate, the lobes valvate; stamens 3-4, the filaments short, the anthers didymous, exserted; ovary 2-celled, with 2 short styles; fruit didymous, dry or fleshy.

Fruit glabrous..... *G. pumilio*.

Fruit pubescent.

Plants annual; leaves in whorls of 6-8, linear or oblanceolate-linear..... *G. Aparine*.

Plants perennial; leaves mostly in whorls of 4, sometimes in 6's.

Hairs of the fruit dense, straight, much longer than the diameter of the fruit..... *G. eriocarpum*.

Hairs of the fruit uncinatate at the apex, little if at all longer than the diameter of the fruit.

Leaves glabrous beneath..... *G. limense*.

Leaves sparsely or densely pilose or hispidulous beneath.

Branches pubescent with chiefly weak and spreading, lax hairs..... *G. canescens*.

Branches retrorse-aculeolate..... *G. ferrugineum*.

Galium Aparine L. Sp. Pl. 108. 1753.

A slender, weak annual with elongate stems, the branches uncinulate; leaves in 6's or 8's, narrow, pale green, 1-3 cm. long or even larger, cuspidate-acuminate, hispidulous on the upper surface, the margins and the costa uncinulate; flowers whitish or yellowish; fruit dry, uncinuate-hispid.

Arequipa: Nevado de Chachani, 3,600 meters, *Pennell 13270*.—Ayacucho: Pampalca, 3,200 meters, open hillside, *Killip & Smith 22261*.—Cuzco: Cuzco, 3,300 meters, *Herrera 534*. Calca, 3,000 meters, *Herrera 2077*. Near Tinta, 3,500 meters, *Cook & Gilbert 209*.—Junín: Tarma, 3,100 meters, shaded stream bank, *Killip & Smith 21901*.—Lima: Matucana, 2,400 meters, trailing on steep shale slope, *127*. San Gerónimo, 150 meters, on rock slide, *5893*. Río Blanco, 3,600 meters, in rocks near stream, *657*. Canta, 3,100 meters, open, rocky banks, *Pennell 14613*. Cerro de Amancaes, *Raimondi 12383*. Río Blanco, 3,200 meters, open hillside, *Killip & Smith 21596*. Chicla, 3,600-3,900 meters, in 1882, *Ball*. Baños, *Wilkes Exped.* Lima, *Rose 18607*. Widely distributed in cooler regions of South America; also in North America and the Old World.

Galium canescens HBK. Nov. Gen. & Sp. 3: 336. 1819. *G. obovatum* HBK. loc. cit. pl. 277. 1819. (?) *G. lappaceum* R. & P. Fl. 1: 59. 1798.

A lax perennial, much branched, the slender, angled stems pilose with weak, whitish hairs, or these sometimes deciduous in age; leaves in 4's, ovate to elliptic or obovate, mostly 5-15 mm. long, obtuse to acuminate, acute at the base, usually densely pilose on both surfaces, sometimes glabrate, 3-nerved; corolla yellowish or whitish, sometimes reddish brown, the lobes caudate-acuminate; fruit dry, densely uncinuate-hispid. Neg. 923.

Ayacucho: Mountains near Huanta, 3,200 meters, *Weberbauer 7516*. Carrapa, 1,000 meters, wooded hillside, *Killip & Smith 22511*.—Cuzco: Without locality, *Herrera 2588*.—Huancavelica: Above Huaitara, 2,800 meters, *Weberbauer 5420*.—Huánuco: Fifteen miles southeast of Huánuco, 3,150 meters, shady, moist thicket, *2112*. Muña, 2,100 meters, shady slope, *3916*. Llata, 2,100 meters, shaded cliff ledges, *2234*. Cani, 2,550 meters, *3386*. Huacachi, 1,950 meters, open bank, *4133*.—Junín: Camino entre Junín y la Montaña, *Raimondi 11891*.—La Oroya, 3,600 meters, limestone cliffs, *937*. Between Viques and Ingahuasi, 3,150 meters, open, rocky hillside, *Killip & Smith 22146*.—Lima: Obrajillos, *Wilkes Exped.*

Matucana, 2,400 meters, steep, rocky slope, 87, 556. San Lorenzo, *Gaudichaud* in 1836. Matucana, *Martinet* 51. San Buenaventura, 2,700 meters, open, rocky slope, *Pennell* 14519.—Moquehua: Carumas, 3,200 meters, climbing in shrubs, *Weberbauer* 7294. Ranging to Bolivia and Colombia.

The species is a somewhat variable one as to leaf form and size and in pubescence. I have been unable to find any good character for distinguishing *G. canescens* and *G. obovatum*, although these two species usually have been considered distinct. The type of *G. lappaceum* R. & P. (non *Salisb.* 1796) was collected at Cerro Puelles, Huánuco.

Pennell 13861 from the Department of Cuzco was distributed as *Galium Closianum* Briq., a Chilean species, but that number is really *Arctophyllum filiforme* (R. & P.) Standl.

Galium dasycarpum Kunze ex Walp. Nov. Act. Nat. Cur. 19: Suppl. 1: 357. 1843, listed as from Peru, is a mere name.

***Galium eriocarpum* Bartl. ex DC. Prodr. 4: 600. 1830.**

Plants slender, suffrutescent, the stems glabrous or scaberulous; leaves small, in 4's, ovate or oblong-ovate, obtuse or acutish, scabrous or hirtellous; flowers in small, dense, terminal cymes; fruit dry, covered with very long and soft, pale, spreading hairs.

Arequipa (?): "Mont Guancac," *Haenke*.—Puno: Lake Titicaca, *Meyen*.—Department uncertain: "Mont Oravio," *Haenke*. Also in Chile and Argentina.

***Galium ferrugineum* Krause, Bot. Jahrb. 40: 349. 1908.**
G. Weberbaueri Krause, loc. cit. *G. andicolum* Krause, op. cit. 350.

A slender perennial with weak, elongate stems; leaves in 4's or 6's, ovate to elliptic or obovate, 4–10 mm. long or larger, acuminate or mucronate, sparsely or rather densely pilose; flowers in small, axillary or terminal cymes, the corolla green to reddish brown; fruit dry, densely uncinat-pilose. Negs. 918, 927, 934.

Ancash: Below Hacienda Cajabamba, 3,000–3,500 meters, *Weberbauer* 3123, type of *G. andicolum*. Ocros, 3,100 meters, *Weberbauer* 5800.—Cajamarca: Above San Pablo, 2,400–2,700 meters, *Weberbauer* 3807, type of *G. ferrugineum*.—Lima: Along the railroad between Lima and Oroya, 2,400–3,000 meters, *Weberbauer* 204, 205, type of *G. Weberbaueri*.—Department unknown: Without locality, *Weberbauer* 5420.

I have seen type material of the three species referred here, and fail to find any important differences between them, if any at all. It is probable that all three names should be reduced further to synonymy under *G. canescens*.

Galium limense Standl. Field Mus. Bot. 4: 298. 1929.

A diffuse, procumbent perennial, the stems sparsely uncinulate; leaves in 4's, oblong-ovate, 5-8 mm. long, acuminate, obtuse at the base, 3-nerved, scaberrulous above; cymes 3-flowered, axillary and terminal; corolla green; fruit dry, densely uncinulate-hispidulous.

Lima: Canta, 2,800 meters, open, rocky slope, *Pennell 14351*, type.

This, too, probably is a mere form of *G. canescens*.

Galium pumilio Standl. Field Mus. Bot. 4: 298. 1929.

A diminutive, densely matted, compact herb, the stems 1-4 cm. long, glabrous; leaves in 4's or 6's, usually longer than the internodes, oblong or ovate, 1.5-2.5 mm. long, obtuse or acutish, glabrous, ciliate; flowers axillary, solitary, on pedicels 4-8 mm. long; fruit fleshy, glabrous.

Junín: Cerro de Pasco, grassy limestone slope, 4,200 meters, *Macbride 3070*, type.

Doubtful genus

Riqueuria avenia R. & P. Fl. 1: 70. 1798. *Riqueuria* R. & P. Prodr. 18. 1794.

A procumbent shrub, the stem branched, the branches naked below; leaves opposite, petiolate, the blades oblong, entire, glabrous, not nerved; racemes short, terminal; pedicels 3-flowered; corolla yellow, fleshy.—Growing in the forests of Chinchao and Cochero, especially near Casapí and Casapillo.

The genus has been referred generally to the Rubiaceae, but its proper position has not been suggested. The group is altogether doubtful.

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BOTANICAL SERIES

FIELD MUSEUM OF NATURAL HISTORY

FOUNDED BY MARSHALL FIELD, 1893

VOLUME XIII

FLORA OF PERU

PART VI, No. 2

BY

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PUBLICATION 393



CHICAGO, U.S.A.

OCTOBER 29, 1937

PRINTED IN THE UNITED STATES OF AMERICA
BY FIELD MUSEUM PRESS

FLORA OF PERU

J. FRANCIS MACBRIDE

PLANTAGINACEAE. Plantain Family

By R. Pilger

Reference: Pflanzenreich IV. 269. 1937.

Annual or perennial herbs, or suffrutescent; leaves mostly rosulate, alternate, or rarely (in subgenus *Psyllium*) opposite. Flowers in axillary spikes, solitary in the axils of sessile bracts. Sepals 4, alternating with the bracts. Corolla scarious, actinomorphic, with a short tube and 4 mostly expanded or reflexed lobes. Stamens 4, the filaments slender, the anthers versatile. Ovary superior, 2-celled or in *Bougueria* 1-celled, the ovules 1-many in each cell; style 1; stigma simple. Fruit a transversely circumscissile capsule or in *Bougueria* a 1-seeded, indehiscent nutlet.—Species about 250, dispersed throughout the world.

Capsule at maturity circumscissile at the middle or below, the upper portion deciduous; seeds 2-many 1. *Plantago*.
Fruit an indehiscent nutlet with 1 curved seed 2. *Bougueria*.

1. PLANTAGO L.

For diagnosis see the description of the family.

Key to subgenera and sections

Leaves alternate, mostly rosulately congested.

Subgenus I. *Euplantago* Harms.

Ovules and seeds always 2, rather large, the hilum side concave.

Anterior sepals connate; peduncles sulcate; bracts elongate, narrowed Sect. 6. *Arnoglossum*.

Anterior sepals free; peduncles not at all sulcate; bracts obtuse or little narrowed; leaves linear Sect. 5. *Leucopsyllium*.

Ovules 3-many.

Ovules (6-)8-many; seeds angled; rhizome short; leaves conspicuously petioled; spikes elongate . . . Sect. 1. *Polyneuron*.

Ovules 4 or more; stems simple or multiparted, cespitose or forming cushions; peduncles short to nearly obsolete, the spikes few-flowered or the flowers reduced to 1.

Sect. 4. *Oliganthos*.

Ovules 3; seeds flat on the hilum face; flowers open (mostly the staminate) or closed, the corolla tube of the closed flowers short; anthers minute; annuals or perennials, not at all or scarcely branched, with lanceolate to elliptic leaves.

Sect. 2. *Novorbis*.

Ovules 3-4; seeds plane; flowers open or closed; bracts very broad; anterior and posterior sepals little diverse; plants small, with short, thick rhizomes.Sect. 3. *Oreophytum*.

Leaves opposite. Subgenus II. *Psyllium* Harms; Sect. 7. *Psyllium*.

Sect. 1. *Polyneuron* Dcne. in DC. Prodr. 13, pt. 1: 694. 1852.

A single species in Peru.*P. major*.

Sect. 2. *Novorbis* (incl. *Cleisantha*) Dcne. in DC. Prodr. 13, pt. 1: 724. 1852.

Plants small, annual, with slender, rather elongate roots.

Bracts triquetrous-lanceolate; leaves lanceolate, rather thin.

P. myosuros.

Bracts ovate; leaves oblanceolate, somewhat rigid. . . .*P. humilior*.

Plants larger, perennial or sometimes flowering the first year; primary root usually disappearing ultimately.

Rhizome short.

Posterior sepals rotund-ovate, obtuse; leaf teeth often bidenticulate.*P. Durvillei*.

Posterior sepals broadly ovate or rotund-ovate, abruptly pointed; leaves scarcely denticulate.*P. hirtella*.

Rhizome relatively elongate.*P. oreades*.

Sect. 3. *Oreophytum* Dcne. in DC. Prodr. 13, pt. 1: 644. 1852.

A single species in Peru.*P. Orbignyana*.

Sect. 4. *Oliganthos* Barnéoud, Monogr. Plantag. 17. 1845.

Sepals connate below; plants not pulvinate.*P. tubulosa*.

Sepals free; plants pulvinate.*P. rigida*.

Sect. 5. *Leucopsyllium* Dcne. in DC. Prodr. 13, pt. 1: 704. 1852.

Plants annual, small, stemless.

Bracts about half as long as the calyx, roundish-ovate; leaves filiform.*P. Macbridei*.

Bracts two-thirds as long as the calyx, ovate; leaves linear-lanceolate or lanceolate.*P. limensis*.

Plants perennial, sometimes suffruticose.

Corolla lobes shortly narrowed from a broad base, shortly acute or apiculate-acute.

Plants strongly ligneous or shrubby, the branches thick; peduncles shorter than or about equaling the leaves.

P. polyclada.

Plants stemless or little branching, glabrous or sparsely pilose.

Bracts broadly rounded above.....*P. amblyacme.*

Bracts elliptic-ovate, narrowed above.....*P. linearis.*

Corolla lobes obtusely rounded, often emarginate, rarely narrower and narrowed but never acute.

Plants definitely ligneous to suffrutescent, the branches more or less elongate.

Peduncles rather elongate; leaves very narrowly linear; plants laxly branched.....*P. sericea.*

Peduncles short; leaves to 2 mm. wide; plants densely cespitose.....*P. extensa.*

Plants less ligneous, sparsely or shortly cespitose-branched.

Leaves only 3-8 mm. long; peduncles extremely short, the spikes strongly reduced.....*P. Godeti.*

Leaves longer.

Peduncles conspicuously and densely villous-tomentose, the spikes slightly pilose.....*P. tarratothrix.*

Peduncles variously pubescent but the indument less developed.

Leaves spatulate-linear, silky-villous; plants diminutive.
P. lamprophylla.

Leaves linear to very narrowly linear.

Leaves glabrescent, with some long, fine hairs below, subfiliform; peduncles to 20 cm. long. .*P. congesta.*

Leaves, at least the younger, densely pilose; peduncles short.

Sepals lance-ovate or the posterior elliptic-ovate; leaves very narrow, densely silky-pubescent; plants small.....*P. Weberbaueri.*

Sepals broader.

Leaves nearly filiform, flexuous and reflexed in drying, silky-villous.....*P. compsophylla.*

Leaves narrowly linear, not at all flexuous, mostly finally glabrescent, usually sulcate above.

P. monticola.

Sect. 6. *Arnoglossum* Dcne. in DC. Prodr. 13, pt. 1: 714. 1852.

One species adventive in Peru. *P. lanceolata*.

Sect. 7. *Psyllium* Dcne. in DC. Prodr. 13, pt. 1: 733. 1852.

One species adventive in South America. *P. Psyllium*.

Plantago amblyacme Pilger, Repert. Sp. Nov. 15: 421. 1919.

Perennial, the rhizome short or very short, with one many-leaved rosette or several densely aggregate ones; leaves somewhat coriaceous, narrowly linear-lanceolate, glabrous or the younger ones sparsely villous, 8–13 cm. long, 2.5–3.5 mm. wide; inflorescences few, the erect peduncles 10–22 cm. long, the short, cylindraceous, dense spikes 2–3.5 cm. long; bracts attaining three-fourths the length of the calyx, elliptic, broadly rounded at the tip, 2.5–3 mm. long, with prominent, broad keel; sepals 3 mm. long, the anterior obovate, emarginate, the posterior rotund-elliptic, concave, strongly keeled; corolla lobes rotund-ovate, minutely apiculate, slightly brownish-spotted at the base, 2.5 mm. long.

Piura: Cordillera west of Huancabamba, 3,200 meters, *Weberbauer* 6047, type.

Plantago compsophylla Pilger, Bot. Jahrb. 37: 644. 1906. *P. congesta* R. & P. ex Pilger, op. cit. 62: 77. 1928, non *P. congesta* R. & P. Fl. 1: 51. 1798.

A perennial with rather slender root, short, lignescent, simple or shortly branching stem, and densely congested leaves, these at first erect, flexing or reflexing in age, narrowly linear, 6–10 cm. long, ashy white with a silky-villous indument; inflorescences few, the peduncles 11–15 cm. long; bracts two-thirds as long as the calyx, broadly ovate, obtuse, minutely villous; sepals 3 mm. long, glabrescent, the anterior obovate-elliptic, strongly carinate, the broadly elliptic posterior ones with thick, rather narrow keel; corolla lobes broadly ovate, obtuse, 2.5 mm. long, with broad, concurrent, brown striae from the base nearly to the tip. Neg. 14155.

Junín: Mountain east of Palca, 2,700–3,000 meters, *Weberbauer* 2448, type; 248.

Plantago congesta R. & P. Fl. 1: 51. pl. 79. 1798. *P. Dombeyi* Pilger, Bot. Jahrb. 62: 76. 1928.

A stout-rooted perennial with short, densely congested, ligneous branches or more or less laxly branched, ligneous stems; leaves crowded at the tips of the branches, somewhat rigid, straight or arcuate, very narrowly linear, flat, 5–11 cm. long, to 1.5 mm. wide, hairy, especially below, with long to very long trichomes; peduncles 8–25 cm. tall, long-pubescent toward the base, the short-cylindric spike 2 cm. long; bracts about two-thirds as long as the calyx, ovate, 3–4 mm. long, the back above slightly short-villous, the keel rather narrow; sepals 3–4 mm. long, the anterior narrowly elliptic, the posterior ovate to rotund-elliptic; corolla lobes ovate, obtuse, with brunnescent spots and nearly percurrent striae, 2.5–3.5 mm. long; seeds brown, 3 mm. long.—Ruiz and Pavón give the type locality as Province of Tarma, in the hills about Huichay, Morocamcha, and Camcham; in their collections at Madrid is a specimen labeled simply "Tarma." Negs. 29599, 14156.

Ancash: Between Samanco and Huaraz, 3,000–3,500 meters, *Weberbauer 3152*.—Lima: Stony places, 2,700 meters, Matucana, 340. Río Blanco, 3,600 meters, 689. Huánuco: Stony slope, Yanahuanca, 3,300 meters, 1240.—Without locality, *Dombey* (Herb. Kunth).

Plantago Durvillei Del. ex Fisch. & Mey. Ind. Sem. Hort. Bot. Petrop. 3: 45. 1837; *Linnaea* 12: Litt. Ber. 105. 1838. *P. pachyneura* Steud. ex Pilger, Bot. Jahrb. 62: 17. 1928.

Leaves narrowly elliptic, above mostly shortly widened, either broadly cuneate or arcuately narrowed, below usually narrowed into a short, rather broad petiole, generally conspicuously dentate, the teeth often bidenticulate; spikes dense above; bracts lance-elliptic or ovate-elliptic; anterior sepals elliptic or obovate-elliptic, the posterior ones rotund-ovate or nearly rotund; seeds 3, elliptic, 2 mm. long or slightly longer.

The species extends from Chile to southern Peru, appearing again in California, with scattered localities in Ecuador and Mexico.

Plantago Durvillei Del. subsp. ***Pflanzii*** Pilger, comb. nov. *P. Pflanzii* Pilger, Notizbl. Bot. Gart. Berlin 5: 261. 1912. *P. pachyneura* Steud. subsp. *Pflanzii* Pilger, Bot. Jahrb. 62: 18. 1928.

Root usually not at all evolute; leaves to 20 (–30) cm. long, slightly or conspicuously dentate, more or less short-villous, often rather white-ciliate marginally; peduncles stout, the spikes elongate; bracts and sepals ciliolate, the latter 3 mm. long.

Lima: Matucana, 2,400 meters, 181, 397.—Huánuco: Moist places, Mito, 3,000 meters, 1428.—Cuzco: Sacsahuamán, 3,200 meters, Herrera 207. Cultivated lands, Cuzco, Herrera 292. "Sackarara."

Plantago Durvillei var. **grandidens** Pilger, comb. nov. *P. Pflanzii* Pilger, var. *grandidens* Pilger, Bot. Jahrb. 50: 267. 1913. *P. pachyneura* Steud. subsp. *Pflanzii* Pilger, var. *grandidens* Pilger, op. cit. 62: 19. 1928. *P. rectirostris* Wallr. ex. Walp. Nov. Act. Acad. Caes. Leop. Carol. 19, Suppl. 1: 401. 1843.

Leaves broader, elliptic or even broadly elliptic, 5–8, rarely 8–15 cm. long, most often prominently and irregularly dentate; peduncles 7–19 cm. long, the spikes 4–19 cm. long.

Lima: Southwest of Matucana, 2,500 meters, Weberbauer 172. —Puno: Meyen.

Plantago extensa Pilger, Bot. Jahrb. 37: 644. 1906.

A perennial with a thick, woody root, the short, stout branches congested into low, dense mats; leaves rigid, narrowly linear, 3–7 (–10) cm. long, to 2.5 mm. wide, densely ashy-silky-pilose; peduncles mostly shorter than the leaves, the rather few-flowered spikes 1–1.5 (to nearly 2) cm. long; bracts silky-villous, triquetrous-ovate, 3 mm. long; sepals villous, 4 mm. long, the anterior ones elliptic, the posterior ones broadly or roundish elliptic; corolla lobes rotund-ovate or rotund-elliptic, 3 mm. long, with deep brown striae from base to tip. Neg. 14157.

Junín: Between Tarma and La Oroya, 3,600–4,200 meters, Weberbauer 2557, type. Valle de Tarma, Nov. 29, 1863, Isern. Stony slope, La Oroya, 4,000 meters, 977.

Plantago Godeti Beauverd, Bull. Soc. Bot. Genève II. 14: 181. f. 14. 1923; Pilger, Notizbl. Bot. Gart. Berlin 10: 835. 1929.

Young plants forming little cushions, the adult ones becoming laxly branched, diminutive shrubs about 8 cm. high; branches densely clothed with the remains of the sheaths; leaves congested at the tips of the branches, only 8–8 mm. long, thickish, densely pubescent with a white-ashy-silky indument; spikes almost obsoletely pedunculate, greatly reduced, only 2-flowered; bracts rotund-ovate, 3 mm. long; sepals nearly 3 mm. long, the anterior ones obovate-elliptic, the posterior ones rotund-obovate; corolla lobes ovate, shortly narrowed, 2 mm. long.

Huancavelica: At about 4,000 meters, Huarón, Godet, type.—Ancash: Pueblo east of Huaraz, on dry, stony slopes, 3,150 meters, 2503.

Plantago hirtella HBK. Nov. Gen. & Sp. 2: 229. 1818, emend. Pilger, Bot. Jahrb. 50: 274. 1913.

Rhizome short, the root soon disappearing; leaves rosulate, 10–12, rather thin, narrowly elliptic or narrowly obovate-elliptic, 8–25 (–30) cm. long, 3.5–6 cm. broad, subentire or somewhat denticulate, subglabrous or villous; spikes few, slender, lax below, 12–25 cm. long, the peduncles 12–30 cm. high; bracts narrowly ovate-lanceolate, 2.5 mm. long, sparsely pubescent with short trichomes, thick-keeled; sepals 2.2–2.7 mm. long, the anterior ones narrowly elliptic, bluntly carinate, the posterior ones broadly ovate or rotund-ovate, abruptly narrowed apically, the keel more or less acute; flowers closed or open, the lobes of the closed ones narrowly ovate, acutish, 2.7 mm. long, those of the open ones ovate or broadly ovate, 2.2–2.5 mm. long; seeds 3, elliptic, brownish olive or obscurely brown, 1.2–1.7 mm. long.—The area of distribution for the species extends from southern Brazil, Paraguay, and Argentina through the Andes to Mexico.

Huánuco: Montaña, Muña, 2,100 meters, 1912. Northwest of Mito, 3,300 meters, grassy uplands, 1932.—Cuzco: Valle de San Miguel, 2,000 meters, *Herrera* 1987. At 950 meters, in 1931, *Bües*. Huasao, 3,200 meters, edge of an irrigating ditch, *Herrera* 3018. Cuzco, *Soukup* 256.—Puno: Cancharani, *Soukup* 39. “Llantén,” “huacac-coallon.”

Plantago humillior Pilger, nom. nov. *P. humilis* Dcne. in DC. Prodr. 13, pt. 1: 724. 1852; Pilger, Notizbl. Bot. Gart. Berlin 10: 831. 1929, non *P. humilis* Jan.

Plants small, with a slender root and thickish, rather rigid, oblanceolate leaves to 4–5 cm. long, sparsely pilose to nearly glabrescent; peduncles short, with the very short spike shorter than the leaves, or the spike sometimes to 2 cm. long; bracts ovate or broadly ovate; sepals 2 mm. long, the anterior elliptic, the posterior rotund; corolla lobes ovate, 1.2–1.7 mm. long; seeds 3, pale olivaceous or brown, usually narrowly elliptic, 1.7–2 mm. long.

Lima: Canta, 3,100 meters, bare, rocky slope, *Pennell* 14592.—Puno: Chuquibambilla, 4,000 meters, *Pennell* 13374; ledges of limestone rock, 3,900 meters, *Pennell* 13404. Bolivia.

Plantago lamprophylla Pilger, Bot. Jahrb. 37: 645. 1906.

A low perennial with abbreviated, simple or little branched stems and small, dense, many-leaved rosettes; leaves thickish, spatulate-linear, 1–few, more than 2 cm. long, above to 2.5 mm. wide, densely whitish or yellowish sericeous-villous, finally more or less

glabrescent; inflorescences rather many, the peduncles about equaling the leaves, the small, ovoid-globose or globose spikes 5–7 mm. long; bracts ovate, about equaling the calyx, 4 mm. long, long-hirsute-villous; sepals 3–4 mm. long, copiously hirsute-villous, the anterior ones narrowly obovate-elliptic with thick keel, the posterior ones elliptic, the keel rather narrow; corolla lobes ovate-lanceolate, subacute, 2.2 mm. long; capsule broad, rounded apically; seeds brown, slightly shining, 2.5 mm. long.—Illustrated, Weberbauer, 204. Neg. 14161.

Lima: Casapalca, 5,000 meters, loose soil, 841. Alpamina silver mine, 4,500 meters, *Weberbauer 5128*.—Junín: In mats, Yauli, 4,400 meters, *Weberbauer 292*, type. In limestone between Tarma and La Oroya, 4,000 meters, *Weberbauer 2537*.

***Plantago lamprophylla* var. *humillima* Pilger, loc. cit.**

Tiny, the densely crowded leaves never exceeding 1 cm. in length, densely golden- or white-silky-villous; peduncles to 1 cm. long, or the spikes sometimes nearly sessile; bracts broadly ovate, 3.5 mm. long; sepals 3 mm. long.

Junín: La Oroya, 4,300 meters, *Weberbauer 2603*.—Puno: Huanayo, 4,700 meters, *Killip & Smith 22092*.

***Plantago lanceolata* L. Sp. Pl. 113. 1753.**

Commonly occurring in Europe, this species is widely adventive in South America. It is the source of an ingredient found sometimes in cough drops, and an extract of the plant is often employed as a gargle. *P. major* L. has the same properties.

Lima: Chosica, 900 meters, bank of irrigation ditch, 516. "Llantén."

***Plantago limensis* Pers. Syn. Pl. 1: 139. 1805. *P. hirsuta* R. & P. Fl. 1: 51. pl. 78. 1798, non *P. hirsuta* Gilib.**

An acaulescent annual with a slender root and few to many rosulate leaves, these linear-lanceolate or lanceolate, 3–11 cm. long, slightly undulate or remotely and obtusely denticulate, ashy with a somewhat sericeous, villous-lanigerous indument, the younger parts even floccosely lanigerous-tomentose; peduncles 4–19 cm. long, the short, cylindric spike to 6 cm. long; bracts about two-thirds as long as the calyx, ovate or triangular-ovate, strongly carinate like the sepals, these 4 mm. long, the anterior ones narrowly elliptic, the posterior ones narrower, elliptic, concave; corolla lobes narrow, linear-elliptic, acutish; seeds lustrous, obscurely fulvous, 3 mm. long. Neg. 14162.

Lima: Lurín, *Mathews*.—Huánuco: *Dombey*.—Junín: Tarma, *Ruiz & Pavón*.—Arequipa: Hills near Islai, *Isern* (det. Madrid). Mollendo, sandy places, loma, *Weberbauer 1459*.

Plantago limensis* f. *tenuior Pilger, Bot. Jahrb. 62: 45. 1928.

Slender, with narrow leaves 11–12 cm. long and 1–3 mm. broad, less copiously pubescent; peduncles to 17 cm. long, the spike few-flowered or to 2 cm. long.

Lima: Stony slope, Chosica, *Weberbauer 5344*. Stony slopes, 2,700 meters, Huaitara, *Weberbauer 5417*.

Plantago limensis* f. *minima Pilger, loc. cit.

Diminutive, the nearly filiform leaves little rosulate, 2–4 cm. long; spikes 1–2, the slender peduncles 4–6 cm. long, the spike 2–4-flowered.

Arequipa: Tambo near Mollendo, in the loma, *Weberbauer 1577a*.

Plantago linearis HBK. Nov. Gen. & Sp. 2: 229. 1818. *P. luzuloidea* Dcne. in DC. Prodr. 13, pt. 1: 710. 1852. *P. Barneoudii* Dcne. loc. cit.

Stem extremely short, from a rather slender root; leaves densely rosulate, moderately rigid, narrowly linear, 4 to about 10 cm. long, glabrescent or with a few white or whitish hairs; peduncles 6–11 cm. long, long-pubescent below, above, especially below the spike, hirsute-villous; spikes dense, to 2 cm. long; bracts cuneately narrowed from the ovate base, obtuse, lightly villous, with a broad, thick keel; sepals 2.5 mm. long, apically a little villous, the anterior ones obovate-elliptic, with a thick, broad keel, the posterior ones rotund-elliptic; corolla lobes rotund-ovate, 2 mm. long, obscurely spotted basally; capsule ellipsoid, the seeds oval, purplish brown, 2.5 mm. long.—The typical form of the species extends from Colombia to Peru; the species, sens. lat., ranges from Mexico to northern Argentina. Neg. 14163.

Huánuco: Mito, open, stony slope, 3,000 meters, *3353*, 1804. Tambo de Vaca, 4,300 meters, *4375*.—Puno: Agapata, *Lechler 1821*.

Plantago Macbridei Pilger, Notizbl. Bot. Gart. Berlin 10: 832. 1929.

A small annual with a slender root; leaves few, subrosulate, extremely narrow or filiform by the incurved margins, 3–6 cm. long, 0.5 mm. in diameter, glabrous; spike solitary, the slender peduncle finely pubescent, 5–11 cm. long, mostly with only 2 flowers; bracts

reaching about the middle of the calyx, broadly rotund, 2 mm. long; sepals 2.5 mm. long, glabrescent, the anterior ones broadly obovate, with a rather narrow keel, the posterior ones subrotund; corolla lobes narrowly ovate, narrowed, 2 mm. long; capsule ellipsoid, the dull, not at all lustrous seeds purplish brown, 2-2.3 mm. long.

Lima: Steep, stony slope, 2,600 meters, 478, type.

Plantago major L. Sp. Pl. 112. 1753.

Plants medium-sized or larger, the ovate, more or less dentate leaf blades rounded at the base, 10-17 cm. long, the teeth small to large; petioles to 20 cm. long; peduncles 7-25 cm. long, the spike 4-13 cm. long, usually lax toward the base.—This description is for var. *paludosa* Béguinol, subvar. *incisa* Pilger, adventive in Peru, as the Tessmann collection. Cf. *P. lanceolata* L. for medicinal use.

Loreto: Middle Río Ucayali, *Tessmann 3181*. Iquitos, 120 meters, *Williams 3577*. Fortaleza, 200 meters, *Williams 4325*.—San Martín: San Roque, 1,400 meters, *Williams 7755, 6928, 7146*.—Cuzco: Machupicchu, *Herrera 3199*. A plant of Old World origin, widely naturalized in America. "Llantén."

Plantago monticola Dcne. in DC. Prodr. 13, pt. 1: 711. 1852.

A small or diminutive perennial, the flowering stems of the younger plants short and simple, becoming woody and densely to nearly pulvinately branched; leaves many, densely congested, narrowly linear, 2-11 cm. long, sulcate above by the recurving margins, the younger ones more or less densely white- or rather yellowish-silky-pilose, finally glabrescent or nearly so or in the groove somewhat pilose; peduncles 2-10 cm. long, the short spike ovate to short-cylindric; bracts two-thirds to three-fourths the length of the calyx, broadly ovate, 3 mm. long, lightly villous or glabrescent; anterior sepals elliptic or broadly elliptic, slightly villous, the keel thick; posterior sepals rotund-elliptic, the keel definitely narrow; corolla lobes ovate, obtuse, 2-2.7 mm. long; seeds dark reddish brown, 2.5 mm. long. Neg. 14166.

The type, from the Puno region, is *Weddell 4507*. The species is especially common in Bolivia and extends to northern Argentina and northern Chile; in Peru are several aberrant forms.

Plantago monticola Dcne. subsp. *sericans* Pilger, Bot. Jahrb. 62: 80. 1928.

Leaves 5-12 cm. long, 1-1.5 (rarely to 3) mm. wide, retaining a rather dense, white or yellowish, silky indument; bracts more or less densely villous; sepals villous above, 3 mm. long.

Puno: Araranca, 4,100 meters, rocky, siliceous slope, *Pennell 13449, 13467*. Northern Argentina; Bolivia.

Plantago monticola* subsp. *Herrerai Pilger, Bot. Jahrb. 62: 81. 1928.

Larger, becoming densely caespitose; bracts narrowly ovate, 3.5–3.7 mm. long, moderately villous; sepals 3.5–4 mm. long, densely villous; corolla lobes 2–2.7 mm. long.—Illustrated, Herrera, Estudios Fl. Cuzco, two pls. opp. p. 172. "T'chsu-i'chsu."

Plantago monticola* var. *maiuscula Pilger, loc. cit.

Finally densely caespitose, the leaves more or less minutely silky-villous or in age glabrescent, to 15 cm. long; inflorescences numerous, the more or less erect peduncles to 20 cm. tall.

Cuzco: About Cuzco, *Herrera 174*; at 3,600 meters, *Herrera 3400*. Valle del Paucartambo, 3,500 meters, *Herrera 1827*.

Plantago monticola* var. *maxima Pilger, loc. cit.

Root woody, to 1 cm. thick; branches very short, densely fasciculate, thus forming large, extremely compact mats; leaves convolute from the margins, 1–1.5 mm. broad, or expanded to 2.5 mm. broad, to 20 cm. long, with a fine, close, lustrous but rather plentiful, ashy villosity, at length glabrescent; inflorescences many, the peduncles 15–25 cm. long.

Cuzco: Near Cuzco, 3,700–3,900 meters, *Herrera 488*.

Plantago monticola* subsp. *crispula Pilger, Bot. Jahrb. 62: 81. 1928.

Comparatively small, the leaves only 2–4 cm. long, more or less densely short-villous, slightly lustrous, finally glabrate; peduncles 2–4 cm. long, the spikes small.

Arequipa: Arequipa, 2,200–2,500 meters, *Guenther & Buchtien 2002, 2011, 2013*. Bolivia and northern Chile.

The species is employed in popular medicine as a diuretic and blood purifier (*Herrera*).

Plantago myosuroides Lam. Ill. Gen. 1: 342. 1791.

Small or nearly tiny plants with slender, fusiform roots and usually numerous rosulate, lanceolate leaves, these 4–10 (–15) cm. long, 4–20 mm. wide, subentire or dentate, more or less sparsely villous; peduncles 4–15 cm. long, the slender spikes 4–15 cm. long; bracts subequaling the calyx, narrowly triquetrous-lanceolate, pubescent with rigid, spreading hairs, conspicuously thick-carinate; sepals

similarly pubescent, 2–2.5 mm. long, the anterior narrowly elliptic, the posterior broadly ovate or rotund-ovate; flowers closed or open, the lobes narrowly ovate or ovate; seeds 3, commonly narrowly elliptic, pale or dark brown-olive, 1.2–1.5 mm. long.

Lima: Matucana, 2,600 meters, on rock walls, 120. Río Blanco, 5,000 meters, 780.—Junín: Huancayo, 3,300 meters, *Killip & Smith 22038*. Widely distributed in southern Brazil, Uruguay, and Argentina.

Plantago myosuros* var. *parviflora Pilger, Bot. Jahrb. 50: 247. 1913.

Leaves lanceolate, small, conspicuously dentate; bracts 2–2.5 mm. long; sepals 1.7–2 mm. long; flowers closed or open.

Huánuco: María del Valle, on dry hill, 2,100 meters, 3550.

Plantago Orbignyana Steinh. ex Dcne. in DC. Prodr. 13, pt. 1: 704. 1852.

Rhizome short, thick, the root rather elongate; leaves more or less numerous, rosulate, narrowly ovate-elliptic or narrowly elliptic, obtuse, narrowed to a short petiole, 2–6 cm. long, the margins slightly undulate or distinctly and irregularly dentate, glabrescent above, villous beneath or short-villous on both sides; peduncles to 5–6 cm. long, the densely flowered spikes to about 1.5 cm. long; bracts broadly ovate, obtusely concave, more or less ciliate, 2.2–3 mm. long; sepals glabrous, 2–2.5 mm. long, the anterior ones elliptic or broadly elliptic, the posterior ones rotund-ovate or rotund; flowers closed or open, the small, ovate lobes 1–1.2 mm. long; seeds 3–4, dark olivaceous, narrowly elliptic, 2–2.5 mm. long.

Junín: Between Tarma and Jauja, 4,500 meters, *Killip & Smith 21974*.—Arequipa: Arequipa, *Guenther & Buchtien 1737*.—Puno: Chuquibambilla, 3,900 meters, *Pennell 13374a*.—Without locality, *Meyen*.—Southern Peru: *Weddell*. Northern Argentina; Bolivia.

Plantago Orbignyana* var. *lasiantha Pilger, Bot. Jahrb. 50: 284. 1913.

Leaves more villous, little dentate; peduncles to 9 cm. long; spikes lax at the base, nearly 3 cm. long; bracts long-villous-ciliate, sparsely villous on the back, 3.5 mm. long; sepals short-ciliolate toward the apex, 3 mm. long.

Lima: Chicla, 3,700 meters, among stones, *Weberbauer 244*, type. Río Blanco, 3,000–3,500 meters, *Killip & Smith 21554*; stony hill-top, 4,500 meters, 2959.

***Plantago oreades* Dcne.** in DC. Prodr. 13, pt. 1: 699. 1852.

Rhizome stout, horizontal; leaves lanceolate or elliptic-lanceolate, 8–15 cm. long, entire or slightly obtuse-dentate, glabrous or beneath on the nerves slightly villous; inflorescences few, the peduncles 10–17 cm. long; spikes 8–10 cm. long; bracts elliptic-ovate, 2.5–3 mm. long, short-pubescent; sepals 2.5–2.7 mm. long, glabrescent, the anterior ones elliptic, the posterior ones elliptic-rotund to rotund; corolla lobes (in the open flowers) rotund-cordate, rounded apically, very shortly apiculate by the percurrent nerve, 1.5–1.7 mm. long.

Lima: Puente de Anché, 3,500 meters, *Weberbauer* 225. Colombia.

***Plantago polyclada* Pilger,** Bot. Jahrb. 37: 643. 1906.

Suffrutescent, with a very stout, ligneous root; stems divided at the base into thickish, ligneous, ascending-suberect branches, densely clothed with persistent, broad leaf sheaths, short-branching, especially at the apex; leaves congested at the tips of the branchlets, linear, 2.5–9 cm. long, shortly silky-pilose, dilated at the base into triquetrous sheaths, densely villous within; peduncles equaling or shorter than the leaves, the subglobose, few-flowered spikes to 1 cm. long; bracts about three-fourths as long as the calyx, oval-ovate; sepals nearly 4 mm. long, the anterior ones narrowly elliptic, broadly keeled, the posterior ones broadly to roundish elliptic, concave, with a strong keel; corolla lobes roundish-elliptic, shortly narrowed and pointed apically, 3 mm. long, marked from the base nearly to the tip with brownish striations. Neg. 14169.

Puno: On limestone, 4,000 meters, Azángaro, *Weberbauer* 484, type; 185.

***Plantago Psyllium* L. Sp. Pl. 115. 1753.**

A Mediterranean species, collected a number of times as an adventive in South America, as in Ecuador and Bolivia, in cultivated lands or sandy fields, but apparently not yet found in Peru.

***Plantago rigida* HBK.** Nov. Gen. & Sp. 2: 227. *pl. 126.* 1818.

Pulvinate, composed of many small rosettes; leaves rigid, lustrous, linear-lanceolate or linear, 1–2 cm. long, impressed-puncticulate above; flowers unisexual; spikes reduced to a solitary flower; peduncle of the staminate flowers extremely short; bract vaginately enclosing the calyx, when expanded nearly semi-orbicular; sepals lance-oval, 6 mm. long; corolla tube narrow, 6–8 mm. long; anthers well exerted; pistillate flower short-peduncled; stigma well exerted; columnar carpophore thickish, to 2 mm. long; 1–4 seeds developing, thick, 2 mm. long, little-angled.

This species, which in typical form occurs most frequently on the paramos of Ecuador and rarely in Colombia and Bolivia, is represented in Peru by two varieties.

Plantago rigida* var. *pusilla Wedd. Chlor. And. 2: 162. 1857.

Leaves to 1 cm. long; plants densely pulvinate, the branches extremely short.—Presumably it is this form that Weberbauer, 109, describes as forming low, green cushions as broad as one-half meter, composed of delicate rosettes pressed together, and recalling *Azorella*.

Ancash: Cordillera Yanashallash, between Huaraz and Chavín de Huantar, 4,300–4,500 meters, *Weberbauer 3292*.—Ayacucho: Prov. La Mar, puna, 3,700 meters, *Weberbauer 5591*—Cuzco: Cerro de Colquipata, open, grassy puna, 4,000 meters, *Pennell 13755*.—Puno: Sandía, above Cuyocuyo, 4,000 meters, *Weberbauer 1050*; 219. Also at Carabaya, at over 4,000 meters, according to Weddell.

Plantago rigida* var. *angustior Pilger, Bot. Jahrb. 37: 646. 1906.

Leaves narrower than in the type, thicker, short, linear, shortly rounded at the obtuse tip.

Ancash: Prov. Huari, above Ponto in bunch-grass formation, 4,200 meters, *Weberbauer 3301*.

Plantago sericea R. & P. Fl. 1: 51. pl. 79. 1798. *P. vestita* R. & S. Syst. Veg. 3: 149. 1818.

Ligneous, nearly suffrutescent, the stems divided into many decumbent or arcuate-ascending, laxly branching branches; leaves densely crowded at the branchlet tips, marcescent, persisting, more or less curving, narrowly linear, 2–5 cm. long, never more than 1 mm. wide, slender-sulcate above, silky-pilose, the triquetrous sheath with longer, villous-tomentose trichomes; inflorescences on each branch few, the rigid but slender peduncles 10–15 cm. long; spikes short, dense, 10–11 mm. long; bracts as much as half as long as the calyx, broadly ovate, villous; sepals (anterior a little narrower) 3.2–3.5 mm. long, elliptic or broadly elliptic, slightly villous, strongly carinate; corolla lobes broadly elliptic or broadly ovate-elliptic, obtusish, 3 mm. long, marked medially with rather wide striae; seeds narrow, about 3 mm. long, brownish. Neg. 14170.

Junín: On dry hill near Tarma, *Ruiz & Pavón*.

Plantago tacnensis Pilger, Repert. Sp. Nov. 15: 424. 1919.

Plants small, annual; leaves rather numerous, rosulate, linear or lance-linear, 1.5–4.5 cm. long, 1–3 mm. wide, gradually narrowed

to the subobtuse apex, lanate-villous with grayish white hairs; inflorescences numerous, the peduncles decumbent or arcuate-ascending, equaling or slightly exceeding the leaves, the spikes small, lax, usually distinctly interrupted, up to 1.5 cm. long, the axis tomentose-villous; bracts half as long as the calyx, ovate, obtuse, villous-ciliate, sparsely villous dorsally; sepals 2.5–2.7 mm. long, sparsely villous dorsally; corolla lobes narrow, subobtuse, 1.5 mm. long; capsule ellipsoid, finally longer than the calyx, up to 4 mm. long, circumscissile below the middle; seeds large, blackish brown, lustrous, smooth. Neg. 14171.

Tacna: Tacna, on bare, sandy hills, 800–900 meters, *Woitschach 1890 and 1891*, type.

Plantago tarattothrix Pilger, Bot. Jahrb. 37: 644. 1906.

A small perennial with a rather slender root and short stems parted into many short branches; leaves many, fasciculate, narrowly linear, 6–9 cm. long, to 2 mm. wide, grayish white with a silky-villous or floccose-villous pubescence; peduncles to 10 cm. long, densely yellowish white or yellowish brownish villous-tomentose; spikes moderately dense, to nearly 2 cm. long; bracts about two-thirds as long as the calyces, ovate, 3.2–3.5 mm. long, long-villous; sepals 3 mm. long, the anterior ones narrowly elliptic, marginally and dorsally long-villous without, with a thick keel; posterior sepals rotund-elliptic to nearly rotund, the keel rather narrow; corolla lobes broadly ovate-elliptic, 2 mm. long. Neg. 14172.

Cajamarca: Pass of Coimolache, above Hualgayoc, 4,000 meters, *Weberbauer 3962*; 271.

Plantago tubulosa Dcne. in DC. Prodr. 13, pt. 1: 728. 1852.

Rhizome short, little if at all divided; leaves densely rosulate, rigid, lanceolate, 1–4 cm. long, coarsely dentate, lobate-dentate, or nearly entire; flowers unisexual; staminate spike 1–2-flowered, the peduncle nearly wanting; bracts clasping the spike, rotund-ovate when expanded; calyx 7–10 mm. long, the sepals connate below, the free portions lanceolate; corolla tube 10–12 mm. long; anthers long-exserted; pistillate spikes 1–2-flowered; stigma long-exserted; capsule with columnar stipe (carphophore) to 3 cm. long or often much shorter, thickish; seeds 4–6.—Illustrated, Wedd. Chlor. And. 2: pl. 64. Probably *P. Purpusii* Brandeg. from Mexico is not specifically distinct.

Ancash: Huarapasca, bunch-grass slope, 4,950 meters, 2489.—Lima: Grassy slopes, Río Blanco, 4,500 meters, 789.—Huánuco: Wet

slopes, 3,600 meters, Mito, 1884.—Puno: Carabaya, Weddell. Northern Chile and northern Argentina to Ecuador.

Plantago Weberbaueri Pilger, Bot. Jahrb. 62: 83. 1928.

A diminutive perennial with a woody, thickish root and short, simple or branched stems, the branches clothed with dead leaf remains; branches, if many, congested into compact cushions; leaves narrowly linear, thickish, sulcate, 1–6 cm. long, densely sericeous with a silvery or yellowish indument, finally, to greater or less degree, glabrescent; inflorescences extremely small, the peduncles 1–6 cm. long, the spikes few-flowered; bracts ovate or rotund-ovate at the base, more or less narrowed, 3–4 mm. long; sepals 3–4 mm. long, the anterior ones lance-ovate, villous, thickly carinate, the posterior sepals elliptic-ovate, concave; corolla lobes lance-ovate, longish or long-narrowed, the apex obtusish, 1.5–3 mm. long, spotted at the base. Neg. 14175.

Ayacucho: Silver mine of Santa Inés, in puna, 4,300 meters, *Weberbauer* 5453, type.—Lima: Río Blanco, 4,000 meters, 736.—Huánuco: South of Mito, 3,700 meters, 1895, 1896.—Cuzco: At 3,400 meters, *Herrera* 135, 448 in part.

2. BOUGUERIA Dcne.

Reference: Dcne. Ann. Sci. Nat. II. 5: 132. 1836; Hook. Lond. Journ. Bot. 4: 567. pl. 19. 1845.

Spikes short, ovoid-globose, the bracts broad, even broadly round-ovate, the nerves in the keel more or less marked. Sepals 4, small, narrow, densely pubescent with long, slender hairs. Corolla tube extremely slender, apically dentate but not distinctly lobed. Stamen 1, the elliptic anther well exerted. Style filiform. Ovary obovoid-globose, 1-celled, the ovule affixed to a short, columnar, basal placenta, transverse, reniform-curved. Fruit indehiscent, globose; embryo large, curved; cotyledons larger than the radicle.—The genus consists of a single species.

Bougueria nubicola Dcne. Ann. Sci. Nat. II. 5: 132. 1836; Hook. Lond. Journ. Bot. 4: 568. 1845.

Root stout, the stems short, simple, thick, densely yellowish-long-lanate above in the axils of persistent leaves; leaves densely rosulate, linear, 1–4 cm. long, or in young specimens to 6 cm. long, the younger densely yellowish-silky-villous, gradually becoming glabrescent and finally glabrate; peduncles 1–2.5 cm. long, the spikes to 1 cm. long; bracts 5–5.5 mm. long; sepals 2 mm. long, the

corolla to twice as long.—The type was collected by d'Orbigny at 4,800 meters, Las Lagunas above Potosí, Bolivia; Weddell gives a Peruvian record as between Puno and Arequipa.

Ayacucho: Silver mine of Santa Inés, in puna, 4,300–4,500 meters, *Weberbauer 5429*.—Puno: Sandía, Poto, 4,500 meters, *Weberbauer 994*; 219 (in error as "*nubigena*").—Arequipa: Arequipa, 2,000–2,500 meters, *Guenther & Buchtien 1734*. Bolivia.

CAPRIFOLIACEAE. Honeysuckle Family

By E. P. Killip, U. S. National Museum

Shrubs, trees, or woody vines, rarely herbs; leaves usually estipulate, opposite, simple or pinnate; flowers perfect, regular or irregular; calyx tube adnate to the ovary, the limb 3–5-dentate or lobate; corolla gamopetalous, rotate or tubular, the limb 5-lobed or bilabiate; stamens usually 5, inserted on the corolla tube alternate with the lobes; ovary inferior; style simple or lobed; fruit a berry, drupe, or capsule, 1–6-seeded.

The Japanese honeysuckle (*Lonicera japonica* Thunb.) is cultivated in northern Peru, and may have become established. It is known as "madreselva" and "brinco de dama." *Lonicera Caprifolium* L., likewise known as "madreselva," is cultivated in Cuzco according to Herrera.

Leaves pinnate; fruit 3–5-seeded 1. *Sambucus*.

Leaves simple; fruit 1-seeded 2. *Viburnum*.

1. SAMBUCUS L.

Shrubs or trees; leaves pinnate or bipinnate, the leaflets serrate or laciniate; flowers small, in compound, flat-topped or thyrsoïdal cymes; calyx 3–5-dentate; corolla regular, rotate, 3–5-lobed; fruit a small drupe, containing 3–6 one-seeded nutlets.

The name "sauco" is applied to species of this genus throughout Spanish America. In Cuzco *S. peruviana* is known also as "rayán." The leaves have excitant properties, and from the fruits is prepared a sirup which is used for throat troubles and in the cure of ulcers. Leaflets, or some of them, pinnately parted, glabrous or sparingly pubescent on the midnerve, subcaudate, the serrations rather distant toward the apex *S. mexicana* var. *bipinnata*.

Leaflets not parted, pubescent on the nerves and veins beneath, acute, acuminate, or subobtusate, closely serrate throughout. *S. peruviana*.

Sambucus mexicana Presl, var. **bipinnata** (Schlecht. & Cham.) Schwerin, Mitt. Deutsch. Dendr. Ges. 1909: 34, 328. 1909. *S. bipinnata* Schlecht. & Cham. Linnaea 5: 171. 1880.

A small tree or a shrub, 2-4 meters high (perhaps higher), glabrous, or sometimes the under side of the midnerve of the leaflets sparingly pilosulous; leaflets 5-7, the lower pairs usually trifoliate with the lateral leaflets reduced, ovate-lanceolate, 3-10 cm. long, 1-4 cm. wide, subcaudate-acuminate, sharply serrate, the teeth rather distant toward the apex; inflorescence a flat-topped cyme up to 20 cm. wide; corolla limb about 6 mm. wide; fruit black.

San Martín: Tarapoto, 750 meters, *Williams* 5933. San Roque, 1,350-1,500 meters, *Williams* 7028.—Loreto: Mouth of Río Pastaza, 150 meters, *Killip, Smith & Dennis* 29180. Mishuyacu, 100 meters, *Klug* 860. La Victoria, *Williams* 2835. Iquitos, *Williams* 1428, 1532, 7919.—Huánuco: Huánuco, *Kanehira* 206.—Junín: San Ramón, 1,700 meters, *Killip & Smith* 24713. Southwestern United States, Mexico, and Central America to Venezuela and Peru.

Sambucus peruviana HBK. Nov. Gen. & Sp. 3: 429. 1820.

A medium-sized tree up to 12 meters high, the branchlets glabrous; leaflets usually 7, ovate or ovate-oblong, rarely obovate, 4-12 cm. long, 3-5 cm. wide, acute or acuminate, rarely subobtusate, closely and evenly serrate, glabrescent above, hirtellous on the midnerve and on the veins beneath; inflorescence a flat-topped cyme; corolla limb about 6 mm. wide, the lobes suborbicular; fruit black, 5-6-seeded.

Lima: Río Blanco, 3,000-3,500 meters, cultivated, *Killip & Smith* 21746.—Huánuco: Pampayacu, *Kanehira* 188.—Cuzco: Ollantaitambo, 3,000 meters, *Cook & Gilbert* 786. Huasao, 3,200 meters, *Herrera* 3025. Also in Bolivia and northern Argentina. Apparently also in Central America, where perhaps introduced.

2. VIBURNUM L.

Reference: *Killip & Smith*, The South American species of *Viburnum*, Bull. Torrey Club 57: 245-258. 1931.

Erect shrubs or small trees; leaves opposite or ternate, simple, entire or toothed; flowers small, borne in compound cymes; calyx 5-lobed; corolla rotate or broadly campanulate, 5-lobed; stamens 5, inserted at the base of the corolla tube; ovary 1-celled, the ovule solitary; style very short and thick, glabrous or pubescent; fruit drupaceous, 1-seeded.

Leaves densely and persistently stellate-tomentose beneath, sparingly to densely tomentose above; style pubescent. . . . *V. reticulatum*.

Leaves essentially glabrous, sometimes pilosulous on the nerves and in their axils on the lower surface; style glabrous.

Corolla more than 4 mm. wide when expanded.

Leaves all opposite, never in 3's.

Leaves membranous, short-acute, subentire, the petioles up to 1.5 cm. long. *V. ayavacense*.

Leaves coriaceous, usually long-acuminate and denticulate to the base, the petioles 1.5-2.5 cm. long. . *V. Witteanum*.

Leaves predominately in 3's.

Margin of the leaves entire.

Branchlets essentially glabrous; peduncles and rays of the inflorescence finely subappressed-hirtellous, many of the hairs simple. *V. triphyllum*.

Branchlets, peduncles, and rays of the inflorescence densely stellate-tomentose. *V. incarum*.

Margin of the leaves toothed, at least toward the apex.

Leaves obovate or narrowly oblanceolate, 3-4-toothed at the apex. *V. tridentatum*.

Leaves ovate or ovate-lanceolate, obscurely toothed down to the middle. *V. Mathewsii*.

Corolla not more than 4 mm. wide even when expanded.

Inflorescence mainly terminal at the ends of elongate branchlets; petioles averaging about 10 mm. long. *V. Jelskii*.

Inflorescence subaxillary as well as terminal, borne on numerous short, leafy branchlets; petioles 5-10 mm. long. *V. Seemenii*.

Viburnum ayavacense HBK. Nov. Gen. & Sp. 3: 428. 1820.
Oreinotinus ayavacensis Oerst. Kjoeb. Vid. Medd. 1860: 290. 1861.

A shrub about 4 meters high, the branchlets essentially glabrous; leaves ovate, 5-8 cm. long, 2-5 cm. wide, acute or subacute, rounded or slightly cordate at the base, entire, or obscurely denticulate toward the apex, membranous, glabrous, or sparingly stellate-pilosulous beneath, the petioles about 1 cm. long; cymes 6-7-rayed, the peduncle and rays stellate-tomentose; corolla 6-7 mm. wide; style glabrous.

Piura: Ayavaca, 2,400-2,700 meters, *Humboldt & Bonpland* (type); *Weberbauer 6387*. Also in Ecuador.

Viburnum incarum Graebn. Bot. Jahrb. 37: 435. 1906.

A shrub or a much branched tree, 3-5 meters high, the younger branches, peduncles, and rays of the inflorescence densely stellate-tomentose; leaves usually in 3's, ovate or oblong-ovate, 4-7 cm. long, 1.5-3.5 cm. wide, subacute, entire or nearly so, minutely stellate-pubescent on the nerves above, pilosulous in the axils beneath; cymes up to 9 cm. wide, the peduncle about 6 cm. long, the rays 5-7; calyx lobes fimbriate; flowers about 5 mm. wide; style glabrous; fruit ovoid.

Junín: Huacapistana, 1,500-2,000 meters, *Killip & Smith 24137, 24326, 24508; Weberbauer 1986* (photo. of type seen).

Viburnum Jelskii Zahlbr. Ann. Nat. Hofmus. Wien 7: 1. 1892.

A small tree, 3-6 meters high, the branchlets densely rufo-stellate-tomentose, at length glabrous; leaves ovate or oblong-ovate, 5-12 cm. long, 4-7 cm. wide, acuminate, rounded or subacute at the base, callose-dentate or subentire, essentially glabrous, or sparingly stellate-pubescent beneath, subcoriaceous; cymes 6-10 cm. wide, finely stellate-tomentose, 6-7-rayed; corolla about 4 mm. wide; style glabrous.

Amazonas: Panahuanca, *Mathews 1198*.—San Martín: Tarapoto, *Spruce 4835*. Zepelacio, 1,600 meters, *Klug 3400*. San Roque, 1,400 meters, *Williams 6997, 7170, 7495, 7779*.—Cajamarca: Cutervo, *Jelski 35* (type).—Ayacucho: Carrapa, 1,000 meters, *Killip & Smith 22409, 22496, 22498*. Aina, 900 meters, *Killip & Smith 22734, 23128, 23132, 23172*.—Cuzco: Urubamba Valley, 1,800 meters, *Cook & Gilbert 1157*.—Without locality, *Poeppig 1309*. Also in southern Ecuador.

Viburnum Mathewsii (Oerst.) Killip & Smith, Bull. Torrey Club 57: 253. 1931. *Oreinotinus Mathewsii* Oerst. Kjoeb. Vid. Medd. 1860: 291. 1861. *V. fur* Graebn. Bot. Jahrb. 37: 434. 1906 (?).

A small tree, the branchlets, peduncles, and rays stellate-tomentose, the branchlets at length glabrous; leaves usually in 3's, ovate or ovate-lanceolate, 3-12 cm. long, 2-6 cm. wide, rounded or acuminate, rounded or subcuneate at the base, callose-denticulate or subentire, coriaceous, lustrous and glabrous or sparingly stellate-pubescent above, glabrous beneath or stellate-pubescent on the principal nerves; cymes 5-9 cm. wide, 5-7-rayed, the rays up to 5 cm. long; calyx tube glabrous, glandular, the lobes oblong or ovate-oblong; corolla 5-6 mm. wide.

Amazonas: Bagasán, *Mathews 1605* (type).—Cajamarca: Cutervo, *Jelski 359*. San Miguel, Prov. Hualgayoc, 2,600–2,700 meters (*Weberbauer 3895* [?], type of *V. fur*).—Huánuco: Mito, 2,800 meters, 1385, 1460, 1653, 1749, 3400. Posuso, 3,100 meters, 4779.

There is considerable difference in the texture of the leaves of these specimens, and perhaps more than a single species is represented. The type has very thick leaves, and the Jelski collection very thin leaves. Between these extremes comes the material from Huánuco.

Viburnum reticulatum R. & P. ex Oerst. Kjoeb. Vid. Medd. 1860: 286. 1861, as synonym. *Oreinotinus reticulatus* Oerst. loc. cit. *V. Weberbaueri* Graebn. Bot. Jahrb. 37: 433. 1906.

A shrub, about 3 meters high, densely brownish-stellate-tomentose throughout; leaves obovate or oblong-ovate, 5–10 cm. long, 3.5–6 cm. wide (extremes up to 20 cm. long), obscurely dentate, repand-denticulate, or subentire, obtuse or acute, reticulate, subcoriaceous; inflorescence rays 5–7; corolla 3–4 mm. wide; style pubescent; fruit broadly ovoid.

Cajamarca: Tabaconas Valley, 1,600 meters, *Weberbauer 6241*. Cutervo, 2,300 meters, *Weberbauer 7129*.—Huánuco: Pillao, *Ruiz & Pavón* (type). Monzón, 1,600–1,800 meters (*Weberbauer 3561*, type of *V. Weberbaueri*).

Viburnum Seemenii Graebn. f. *bolivianum* (Gandoger) Killip & Smith, Bull. Torrey Club 57: 258. 1931. *V. bolivianum* Gandoger, Bull. Soc. Bot. France 65: 33. 1918.

A much branched shrub, the branches divergent, elongate, softly and densely yellow-tomentose; leaves ovate or ovate-oblong, 5–12 cm. long, 2–7 cm. wide, acuminate, subrotund or cuneate at the base, entire, or obscurely toothed in the upper half, subcoriaceous, sparingly stellate-pubescent beneath; inflorescence subaxillary as well as terminal, the cymes borne on numerous short, leafy branches, 5–7-rayed, the peduncles and branches softly and densely yellow-tomentose; corolla 3–4 mm. wide; style glabrous.

Huánuco: Cochero, *Ruiz & Pavón*.—Cuzco: Lucumayo Valley, *Cook & Gilbert 1388*. Also in Bolivia. "Pucañahui."

Viburnum tridentatum Killip & Smith, Bull. Torrey Club 57: 251. 1931. *Oreinotinus obovatus* Oerst. Kjoeb. Vid. Medd. 1860: 286. 1861, without description. *V. obovatum* R. & P. ex Oerst. loc. cit., as synonym, not *V. obovatum* Walt. 1788.

A much branched shrub or a small tree, the branchlets densely and softly stellate-tomentose; leaves in 3's, obovate or narrowly oblanceolate, 3-5 cm. long, 1.5-2.5 cm. wide, rounded or short-triangular-acute at the apex, cuneate at the base, finely undulate-denticulate towards the apex (teeth 3-5), sparingly stellate-pubescent with crispate hairs on the nerves and veins both above and beneath; peduncles 3-4.5 cm. long, densely and softly stellate-tomentose; cymes 4-7 cm. wide, pubescent as the peduncle; calyx tube sparingly glandular-punctate, glabrous, the lobes suborbicular; corolla about 5 mm. wide when expanded; style glabrous.

Arequipa: Vitoc, *Ruiz & Pavón* (type).

Viburnum triphyllum Benth. Pl. Hartw. 189. 1845. *Oreinotinus triphyllus* Oerst. Kjoeb. Vid. Medd. 1860: 290. 1861. *O. laurifolius* Oerst. op. cit. 291. pl. 6, f. 11-17.

A shrub or a small tree, the branchlets pubescent with simple or stellate hairs, becoming glabrous; leaves usually in 3's, ovate or ovate-oblong, 4-8 cm. long, 2-5 cm. wide, rounded or acute, entire, coriaceous, lustrous, glabrous, or usually tomentose in the axils of the nerves beneath; peduncle and rays appressed-hirtellous; calyx tube sparingly glandular-punctate; corolla 4-5 mm. wide; style glabrous.

Amazonas: Chachapoyas, *Mathews 1623*, in part (type of *O. laurifolius*); *2114*, in part.—Without locality, *Ruiz & Pavón*; *Mathews 2027* in part, *2038*. Also in Colombia and Ecuador. Two forms of this also occur in Peru.

Viburnum triphyllum f. *lanceolatum* Killip & Smith, Bull. Torrey Club 57: 252. 1931.

Leaves lanceolate or oblanceolate, at least 3 times longer than broad, 10-13 cm. long, 3-3.5 cm. wide.

Huánuco: Cochero, *Ruiz & Pavón*.—Without locality, *Ruiz & Pavón* (perhaps a part of the preceding; type).

Viburnum triphyllum f. *microphyllum* Killip & Smith, loc. cit.

Leaves prevailingly obovate, 1.5-3 cm. long, 0.7-1.5 cm. wide; cymes smaller than in the typical form.

Amazonas: Chachapoyas, *Mathews 1623* in part, *2114* in part (type), *3099*.

Viburnum Witteanum Graebn. Bot. Jahrb. 37: 484. 1906.

A shrub, about 4 meters high, the branchlets sparingly stellate-pubescent, at length glabrous; leaves oblong, 5-13 cm. long, 3-6 cm.

wide, acuminate, rounded at the base, dentate or denticulate toward the apex, coriaceous, sparingly stellate-pilosulous beneath, the petioles 1.5–2.5 cm. long; cymes 7–12 cm. wide, the peduncle and rays stellate-tomentose; corolla 6–8 mm. wide; style glabrous.

Ayacucho: Between Tambo and Río Apurímac, 3,200 meters, *Weberbauer 5589*.—Cuzco: Yanamanchi, 3,100–3,200 meters, *Weberbauer 4960* (photo. of type seen). Also in Bolivia.

In the account of the South American species of *Viburnum* we combined this species with *V. ayavacense*. From the photograph now available it is evident that the type is well matched by several Bolivian specimens, and it is perhaps better to consider the plant from southeastern Peru and Bolivia specifically distinct from the one of northern Peru and southern Ecuador.

Cornus peruviana Macbr. was later transferred to *Viburnum* by Macbride (*Trop. Woods* 24: 29. 1930), but it is now considered to be a true *Cornus* (see Standley, *op. cit.* 43: 16. 1935).

VALERIANACEAE. Valerian Family

By E. P. Killip, U. S. National Museum

References: Dufresne, *Hist. Nat. Med. Valerian.* 1811; Weddell, *Chlor. And.* 2: 17–34. 1857; Höck, *Bot. Jahrb.* 3: 1–74. 1882; Graebner, *op. cit.* 37: 436–451, 464–480. 1906; Briquet, *Ann. Conserv. Jard. Bot. Genève* 17: 326–356. 1914.

Annual or perennial herbs, sometimes low shrubs, the roots with a strong, characteristic odor; leaves opposite, estipulate, often massed at or near the base, simple or compound; inflorescence highly variable, capitate to laxly paniculate and repeatedly branched; flowers perfect, polygamous, or rarely dioecious; calyx tube adnate to the ovary, the limb inconspicuous in flower but becoming a papus in fruit, or wanting; corolla gamopetalous, funnel-shaped or tubular, the limb spreading, 3–5 (rarely 6–8)-lobed; stamens 1–4, inserted on the corolla and alternate with the lobes, usually exserted; ovary inferior, 1–3-celled, one cell 1-ovuled, the others empty; fruit indehiscent, 1-seeded.

This family consists of about 16 genera and from 350 to 400 species, and occurs mainly in the temperate zone and in the high mountains of the tropics. Of the numerous species in Peru, many are known from only a single specimen, and an adequate concept of the family and of the lines of separation between the species is impossible until further collecting has been done. In addition to

the native species, *Valeriana officinalis* L. and *V. Phu* L. are reported from Peru by Ruiz and Pavón, and *Centranthus ruber* (L.) DC. has been collected at Arequipa (*Hinkley 32*). *Plectritis samolifolia* (Colla) Höck is listed from Peru by Stuckert and Briquet (*Ann. Conserv. Jard. Genève* 20: 429. 1919), perhaps through error in associating a Ruiz and Pavón Chilean specimen with Peru. The following Ecuadorean species have been assigned to Peru through faulty geographic knowledge: *Valeriana alypifolia* HBK., *V. hirtella* HBK., *V. microphylla* HBK., and *V. amphiphylis* Graebn.

Corolla 5 (rarely 6-8)-lobed (3-lobed in one species of *Aretiastrum*).

Leaves closely imbricate throughout the stem, 3-angled toward the apex, connate, up to 5 mm. long; flowers solitary in the axils of the upper leaves.....1. *Aretiastrum*.

Leaves not closely imbricate, or in rosettes, flat, usually with a distinct blade; flowers in clusters or, if solitary, borne on the ultimate branches of a diffuse inflorescence.

Anthers orbicular or oblong, the filaments well developed and usually exserted; stems or scapes generally elongate.

Fruit with the two empty cells equaling or larger than the perfect cell; inflorescence few-flowered, the peduncles long and slender.....2. *Astrephia*.

Fruit with the two empty cells much smaller than the perfect cell.....3. *Valeriana*.

Anthers linear, sessile or subsessile; stems or scapes very short and stout, the inflorescence usually flat-topped and much broader than long.....3. *Stangea*.

Corolla 3 (rarely 4)-lobed.

Tube of the corolla long and very slender, needle-like.

5. *Belonanthus*.

Tube of the corolla very short, stouter.....6. *Phyllactis*.

1. ARETIASTRUM Spach

Low, caespitose shrubs, freely branched, the branches very leafy; leaves small, coriaceous, closely imbricate, connate at the base, entire; flowers few, solitary, hidden among the uppermost leaves, sessile or short-pedicelled, polygamous or dioecious, the tube funnel-shaped, the limb 3-5-parted.

Corolla 5-parted; leaves up to 2 mm. long.....*A. Aschersonianum*.

Corolla 8-parted; leaves 3-5 mm. long.....*A. imbricatum*.

Aretiastrum Aschersonianum Graebn. Bot. Jahrb. 37: 448. 1906. *Valeriana Aschersoniana* Graebn. ex Weberbauer, op. cit. 72. 1905, name only.

Leaves scarcely 2 mm. long, strongly dilated and fimbriate at the base, triquetrous toward the apex, obtuse; corolla limb 5-parted; anthers broadly ovate.

Lima: Alpamina, 4,500 meters (*Weberbauer 5150*, type).

Aretiastrum imbricatum Killip, comb. nov. *Valeriana imbricata* Killip, Journ. Wash. Acad. Sci. 18: 501. 1928.

Branches very numerous, 4–6 cm. high; leaves linear-spatulate or linear-oblong, 3–5 mm. long, 1–1.2 mm. wide, obtuse or subacute, subrevolute, ciliate; flowers dioecious, only the staminate known; corolla tube 4–5 mm. long, very slender, the limb 3-parted, the divisions triangular-ovate, subacute; stamens exserted.

Piura: Huancabamba, 3,200 meters, *Weberbauer 6088* (type).

This species surely belongs to *Aretiastrum*, though the corolla has only 3 lobes, whereas in the four other known species it is 4- or 5-lobed.

2. ASTREPHIA Dufr.

Lax, diffuse, annual herbs; leaves pinnate and pinnatifid; cymes few-flowered, with long, slender peduncles, the flowers sessile or short-pedicel, the pedicel usually becoming elongate in fruit; calyx limb very short or almost wanting; corolla tube narrowly funnel-shaped, the limb 5-lobed; style trifid; fruit broadly ovate or rhombic-ovate, epappose, the 2 empty cells equaling or larger than the perfect cell.

Astrephia chaerophylloides (J. E. Sm.) DC. Prodr. 4: 629. 1830. *Valeriana chaerophylloides* J. E. Sm. Pl. Icon. Ined. 3: pl. 53. 1793. *V. laciniata* R. & P. Fl. 1: 42. pl. 69, f. a. 1798. *V. chaerophylla* Pers. Syn. 1: 37. 1805. *Astrephia laciniata* Dufr. Hist. Nat. Med. Valerian 52. 1811.

Leaves membranous, lanceolate in general outline, imparipinnate, the leaflets 1–5-jugate, coarsely dentate or pinnatifid, averaging about 1 cm. long.

Lima: Matucana, 2,400 meters, 191. San Gerónimo, 150 meters, 5905. Atocongo 250–500 meters, *Pennell 14779*. Amancaes, 200–400 meters, *Pennell 14807*.—Huánuco: Posuso, 600 meters, 4604.—Junín: San Ramón, 1,400–1,700 meters, *Killip & Smith 24712*. Pichis Trail, *Killip & Smith 25786, 26096*.—Without locality,

Mathews. Reported by Ruiz and Pavón from Lima, Chancay, Chinchao, and Muña. "Arvegilla." Also in Colombia and Ecuador.

3. VALERIANA L.

Perennial herbs or low shrubs, rarely annuals, erect or ascending, sometimes scandent; roots woody, fleshy, or tuberous; leaves mainly basal in most species, fascicled at the nodes in a few, simple or imparipinnate, entire, toothed, or pinnatifid; inflorescence variable, the flowers in dense clusters which are solitary and terminal, or which form a dense or an interrupted spike or raceme, or the flowers in loose cymes or variously paniculate; calyx limb usually of 5–20 plumose teeth, short and inrolled in flower, at length elongate and forming a pappus; corolla limb 5 (rarely 6–8)-lobed; fruit compressed, the 2 empty cells much smaller than the perfect cell.

The roots of many species of *Valeriana* have medicinal properties.

A. Flowers in dense, globose or subglobose heads which are solitary and terminal, or grouped in a continuous or an interrupted spike, sometimes the lower heads peduncled; leaves mainly basal (except in *V. connata*).

B. Leaves simple, entire or toothed, not pinnatifid.

Stems woody, leafy, the internodes subequal *V. connata*.

Stems herbaceous, leafless or nearly so.

Cauline leaves pinnatifid in the lower half *V. lyrata*.

Cauline leaves entire or wanting.

Leaves ciliolate.

Inflorescence spicate; stem glabrous *V. coarctata*.

Inflorescence capitate; stem finely pubescent.

V. isoetifolia.

Leaves not ciliolate.

Leaf blades more than 4 mm. wide, abruptly or sub-abruptly tapering to the petiole.

Leaves conspicuously serrate *V. serrata*.

Leaves serrulate or entire.

Corolla 5-lobed *V. nivalis*.

Corolla 6–8-lobed *V. globularioides*.

Leaf blades less than 4 mm. wide, gradually tapering to the petiole.

Scapes averaging more than 6 cm. long, the inflorescence an interrupted spike, rarely a single head.

V. Condamoana.

Scapes (or stems) averaging less than 6 cm. long, the inflorescence a single head.

Pappus 5-7-rayed; stem stout.....*V. pycnantha.*

Pappus 10-12-rayed; stem slender....*V. globularis.*

B. Leaves pinnate or pinnatifid.

Fruit pilosulous on one face; plant sparingly to densely pubescent.....*V. globiflora.*

Fruit glabrous; plant glabrous except at the nodes.

Inflorescence a single head.....*V. Trichomanes.*

Inflorescence spiciform.

Basal leaves strictly pinnate, the terminal leaflet much larger than the lateral ones.....*V. Pennellii.*

Basal leaves pinnate or pinnatifid, the terminal segment (or leaflet) smaller than or subequal to the lateral ones.

Leaves less than 1 cm. wide, the leaflets cuneiform, digitate-pinnatifid.....*V. cephalantha.*

Leaves usually more than 1 cm. wide, the leaflets or segments entire.....*V. micropterina.*

A. Flowers in cymes, loose clusters, or distinct, the inflorescence cymose-paniculate, pyramidal, or diffusely paniculate, in a few species the flowers in subglobose heads in a racemose panicle, or in a single, terminal cyme.

Stems woody, not scandent, leafy throughout, the leaves often fascicled.

Leaves pinnate, the leaflets narrowly linear.....*V. virgata.*

Leaves simple, linear to ovate-oblong.

Plant subrepent, the stems ascending, densely tomentose; leaves not more than 1.5 cm. long.....*V. ledoides.*

Plant erect; stems glabrous or puberulent; leaves more than 1.5 cm. long.

Leaves ovate-oblong, about 1 cm. wide, the cauline few.

V. quadrangularis.

Leaves linear, narrowly lanceolate, or oblong, less than 1 cm. wide, the cauline very numerous.

Fruit obscurely nerved; leaves somewhat puberulent.

V. Grisiana.

Fruit strongly ribbed, the ribs elevated; leaves glabrous.

V. costata.

Stems herbaceous, the cauline leaves relatively few and reduced, or scandent plants with woody stems and numerous, developed cauline leaves.

C. Inflorescence cymose-paniculate or racemose-paniculate, the flowers in rather dense clusters (inflorescence a terminal cyme in *V. oblongifolia* and *V. parvula*, and sometimes in *V. interrupta*).

Leaves simple, entire or irregularly toothed, not pinnatifid.

Plant not more than 10 cm. high.

Cauline leaves linear-lanceolate, laciniate-dentate; plant pubescent.....*V. oblongifolia.*

Cauline leaves narrowly linear (or wanting), entire; plant glabrous.....*V. parvula.*

Plant more than 10 cm. high.

Petiole of basal leaves more than twice as long as the blade.....*V. sphaerocephala.*

Petiole of basal leaves not more than twice as long as the blade.

Inflorescence pyramidal, more than 8 cm. wide.

Basal leaves linear-lanceolate or lanceolate, entire.
V. Weberbaueri.

Basal leaves cuneate-obovate, coarsely and irregularly dentate.....*V. Hadros.*

Inflorescence more or less virgate, not more than 8 cm. wide.

Leaves linear-lanceolate to oblanceolate, entire; stem and under side of midnerve of leaves usually pilose.....*V. pilosa.*

Leaves ovate, cordate-ovate, or orbicular-reniform, entire or irregularly toothed; stem essentially glabrous.

Bractlets less than 1 cm. wide; root short-tuberos.....*V. Herrerae.*

Bractlets 1 mm. or more wide; root fusiform, thickened at the apex.

Basal leaves cordulate, obscurely crenulate.

V. nigricans.

Basal leaves tapering to the petiole, dentate or denticulate.....*V. plectritoides.*

Leaves pinnate or pinnatifid.

Terminal leaflet much larger than the lateral ones.

Leaflets entire.....*V. radicata.*

Leaflets dentate.....*V. variabilis.*

Terminal leaflet not larger than the lateral ones.

Inflorescence cymose or cymose-paniculate.*V. interrupta.*

Inflorescence racemose-paniculate or subpyramidal.

Leaves pinnate throughout, the leaflets not united.

Leaflets 3-6-jugate, incised or pinnatisect.

V. sphaerophora.

Leaflets 10-15-jugate, entire or 2-4-toothed.

V. thalictroides.

Leaves pinnatifid in the upper half, pinnate in the lower.

Plant rufo-tomentellous throughout; leaflets and leaf segments irregularly serrate.*V. rufescens.*

Plant glabrous; leaflets and leaf segments regularly crenate-serrate.....*V. asplenifolia.*

C. Inflorescence diffusely paniculate, the flowers single or in clusters of 2-4.

Indument stellate, at least in part.

Upper surface of the leaves stellate-pubescent; leaves subobtus.....*V. tomentosa.*

Upper surface of leaves pubescent with simple hairs; leaves sharply acute.....*V. malvacea.*

Indument simple or none.

Plant scandent.

Leaves simple or trifoliate.

Stem herbaceous; leaves or leaflets repand or sinuate-dentate, rarely entire, rounded or cordate at the base.....*V. scandens.*

Stem somewhat woody; leaves entire, acute at the base.

Fruit about 1 mm. long; ultimate branches of the inflorescence filiform, 3 cm. or more long, the flowers distant.....*V. Pardoana*.

Fruit 2-3 mm. long; ultimate branches of the inflorescence stouter and shorter, the flowers in clusters of 2-3.....*V. Pavonii*.

Leaves pinnate, the leaflets 5 or more.

Leaflets 4-10-jugate, 1-1.5 cm. long; bractlets obtuse.
V. jasminoides.

Leaflets 2-3-jugate, the terminal one more than 2.5 cm. long; bractlets acute.....*V. decussata*.

Plant erect.

Leaves all simple, entire or toothed, not deeply lobed or pinnatifid.

Fruit reticulate with dark lines on one face, papillose on the other, obscurely nerved.....*V. renifolia*.

Fruit smooth, greenish, 3-nerved on one face, 1-nerved on the other.

Plant annual, with a short, tuberous root; fruit densely pubescent on one face. *V. urticaefolia*.

Plant perennial, with an elongate, woody or fleshy root; fruit glabrous on both faces (in *V. Tessendorffiana* sparingly pilosulous on one face).

Stem and leaves densely pubescent. *V. paniculata*.

Stem and leaves essentially glabrous.

Cauline leaves cordate-reniform, numerous.

V. Baltana.

Cauline leaves obovate or ovate-lanceolate, few, or confined to sterile shoots.

V. Tessendorffiana.

Leaves, or some of them, pinnate or pinnatifid.

Fruit pubescent on both faces, reticulate with conspicuous dark lines when mature.

Leaves all pinnate; fruit lance-ovate, less than 1.5 mm. wide.....*V. agrimonifolia*.

Leaves pinnatifid, or some of the lower ones entire; fruit broadly ovate, more than 1.5 mm. wide.

V. pinnatifida.

Fruit glabrous, or pubescent on one face, rarely on both faces, not dark-lined.

Fruit strongly verrucose.....*V. verrucosa*.

Fruit smooth (verruculose in *V. Mathewsii*?).

Leaves all pinnate, the leaflets coarsely toothed, often petiolulate.

Fruit pubescent, abruptly tapering to a beak; bractlets purple-tipped.....*V. variabilis*.

Fruit glabrous, merely acute; bractlets green.
V. Warburgii.

Leaves not all pinnate, entire or denticulate, if pinnate the leaflets sessile.

Fruit glabrous.

Lower leaves densely hirsute; stem not more than 5 mm. in diameter.*V. paniculata*.

Lower leaves puberulous; stem more than 5 mm. in diameter.....*V. bambusicaulis*.

Fruit pubescent, at least on one face.

Basal and lower cauline leaves all simple, crenulate, the upper cauline ones pinnately lobed.....*V. Mathewsii*.

Basal leaves simple or, if pinnate, the lateral leaflets much reduced.

Leaves pubescent, membranous or subcoriaceous, acute or subobtuse.

V. Macbridei.

Leaves glabrous, thick-coriaceous, acuminate.....*V. dipsacoides*.

***Valeriana agrimonifolia* Killip, Journ. Wash. Acad. Sci. 21: 353. 1931.**

A perennial herb, up to about 75 cm. high, essentially glabrous throughout, the fruit pubescent; root thickened at the apex; stem usually single, erect, simple; basal and cauline leaves similar, all strictly imparipinnate, up to 10 cm. long, including a short petiole, and 5 cm. wide, the leaflets 4-5-jugate, ovate or lance-ovate, obtuse or subacute, regularly crenate-serrate, sessile, membranous; inflorescence subracemose-paniculate, elongate, trichotomous and dichotomous, the flowers in small, rather loose clusters; bractlets linear,

divergent; flowers mostly perfect; fruit lance-ovate, about 2 mm. long and up to 1 mm. wide, 3-nerved and densely pilosulous on one face, 1-nerved, rugulose, and sparingly pilosulous on the other, the pappus 8-10-rayed.

Lima: Río Blanco, 3,000-3,500 meters, *Killip & Smith 21663, 21744*. Baños, *Wilkes Expedition*.—Junín: Tarma, 3,100 meters, *Killip & Smith 21933* (type).

Similar to *V. pinnatifida*, but the leaves are all pinnate and the fruit is narrower.

Valeriana asplenifolia Killip, Journ. Wash. Acad. Sci. 21: 352. 1931.

Plant caespitose, essentially glabrous throughout, the root thick, branched toward the apex; stems erect, up to 25 cm. high; basal leaves rosulate, membranous, linear-lanceolate in general outline, 0.5-1.5 cm. wide, acuminate, pinnate, pinnatifid toward the apex, 5-15 cm. long, including a petiole subequal to the blade, the leaflets 10-15-jugate, ovate or lance-ovate, regularly crenate-serrate, obtuse, sessile, the cauline leaves 1-2 pairs, sessile, similar to the basal; inflorescence racemose-paniculate, the flowers in dense, subglobose, short-peduncled heads; flowers apparently dioecious, the staminate larger than the pistillate, the stamens long-exserted; fruit lance-oblong, obscurely 3-nerved on one face and 1-nerved on the other, the pappus 10-rayed.

Junín: Mt. La Juntai, near Huancayo, 4,700 meters, *Killip & Smith 22051* (type), 22086.

Valeriana Baltana Graebn. Bot. Jahrb. 37: 439. 1906.

An erect herb, 30-100 cm. high, essentially glabrous throughout, the root elongate; leaves subrotund or cordate-reniform, obtuse or rounded, the basal up to 12 cm. long and 14 cm. wide, with petioles up to 20 cm. long, repand or subentire, the cauline 2-6 cm. long, 1.5-5 cm. wide, irregularly crenate-serrate or subentire, sessile, clasping; panicle diffuse, trichotomous and dichotomous, the branches very slender; fruit broadly ovate, 3-nerved on one face, 1-nerved on the other, glabrous, the pappus 12-rayed.

Huánuco: Cani, 2,600 meters, 3433.—Junín: Pariahuanca, 2,400-2,500 meters, *Weberbauer 6591*.—Puno: Sandía, *Weberbauer 531* (type).

Valeriana bambusicaulis Killip, Journ. Wash. Acad. Sci. 15: 455. 1925.

A coarse, erect herb, about 3 meters high, the stem up to 2 cm. in diameter, glabrous; leaves of the sterile shoots ovate, long-petioled; basal leaves imparipinnate, the lateral leaflets 4-5-jugate, the terminal and lateral leaflets subequal, oblong or oblong-lanceolate, up to 6 cm. long and 3 cm. wide, acute, entire, finely puberulent or glabrescent, the cauline leaves linear-lanceolate, 2-4 cm. long; panicle diffuse, trichotomous and dichotomous; fruit oblong-lanceolate, 3-nerved on one face, 1-nerved on the other, thick-margined, glabrous, the pappus 6-rayed.

Huánuco: Tambo de Vaca, 3,800 meters, 4463 (type).

Valeriana cephalantha Schlecht. *Linnaea* 28: 483. 1856.

Plant caespitose, essentially glabrous throughout, the root branched toward the apex; stem about 30 cm. high, bearing 1-2 pairs of sessile, pinnate leaves; basal leaves slender, narrowly lanceolate in general outline, 5-10 cm. long, 6-8 mm. wide, petiolate, imparipinnate, the leaflets cuneiform, digitate-pinnatifid or lobulate, the segments obtuse, the cauline leaves similar but smaller, 1-2 pairs; flowers in dense heads forming an interrupted spike, the lower heads usually borne on short branches; bractlets broadly obovate, about 3 mm. wide; fruit broadly ovate, purple-spotted, 3-nerved on one face, 1-nerved on the other, the pappus 5-rayed.

Puno: Tabina, *Lechler* 2044 (type).

Valeriana coarctata R. & P. *Fl.* 1: 40. *pl.* 68, *f.* 8. 1798. *V. armeriaefolia* Schlecht. *Linnaea* 28: 485. 1856.

Root fusiform, thickened at the apex; stem erect, 5-40 cm. high, glabrous; basal leaves linear to lanceolate-spatulate, up to 15 cm. long and 1 cm. wide, subacute, ciliolate, otherwise glabrous or sparingly pilosulous, often subrevolute, fleshy, the cauline leaves ternate or quaternate, sometimes wanting; inflorescence spicate, the heads all sessile, contiguous or usually the lowest one distinct; fruit narrowly lance-oblong, nerveless, glabrous, the pappus 6-8-rayed.

Peru: "Andes," *Maclean*.—Lima: Casapalca, 866. Baños, *Wilkes Expedition*.—Huánuco: Cerro de Pasco, *Mathews* 668.—Junín: Huasa-huasi, *Ruiz & Pavón* (photo. of type).—Ayacucho: Huanta, 4,000-4,200 meters, *Pearce* in 1867.—Puno: San Antonio, *Lechler* 1798 (type of *V. armeriaefolia*).—Cuzco: Panticalla Pass, 3,600 meters, *Cook & Gilbert* 1247. "Huariturú."

The Ruiz and Pavón illustration is best matched by the Mathews specimen. Most of the other ones cited above have much slenderer leaves, and agree well with the type of *V. armeriaefolia*.

Valeriana Condamoana Graebn. Bot. Jahrb. 37: 446. 1906. *V. Romanana* Graebn. loc. cit.(?).

Plant caespitose, glabrous throughout, with a stout, branched rootstock; leaves rosulate, rarely a pair of cauline ones present, narrowly oblanceolate or spatulate, 3–9 cm. long, including the petiole, the blade up to 4 mm. wide; scapes 4–25 cm. high; inflorescence an elongate head or an interrupted spike, the lowest head sometimes as much as 5 cm. below the next one; bractlets obovate, dark at the center; fruit broadly ovate, 1-nerved on one face, nerveless on the other, the pappus 10-rayed.

Peru: Casapalta, 4,300 meters, *Ball* in 1882.—Junín: Yauli, 4,100–4,400 meters, 913; *Weberbauer* 311 (photo. of type seen).

Valeriana Romanana, based upon *Weberbauer* 2972, from Huaraz, Dept. Ancash (photo. of type seen), may be distinct, but additional material now available from the type locality of *V. Condamoana* indicates that the differentiating characters are not constant.

Valeriana connata R. & P. Fl. 1: 39. pl. 67, f. c. 1798. *V. connata* var. *nutans* Graebn. Bot. Jahrb. 37: 444. 1906.

Plant suffrutescent, about 60 cm. high; stems several, branched, leafy, finely pilosulous in 2 vertical lines, otherwise glabrous; leaves lanceolate, 2–3 cm. long, 4–7 mm. wide, acute, sessile, subconnate, ciliolate toward the base; inflorescence spiciform, the flowers in sessile or short-peduncled, subglobose clusters; fruit oblong, glabrous, obscurely 3-nerved on one face, 1-nerved on the other, pappose.

Junín: Diezmo, *Ruiz & Pavón* (fragment of type seen). Yauli, 4,400 meters, *Weberbauer* 349 (cited by Graebner).—Without locality, *Lobb*.

In the variety *nutans*, based on *Weberbauer* 2947, from Pichín, Department of Ancash, the flower clusters are all sessile.

Valeriana costata Schmale, Repert. Sp. Nov. 41: 294. 1937.

A shrub, essentially glabrous throughout, the branches terete, leafy; leaves lanceolate or oblong (or the upper ovate), up to 5 cm. long and 5 mm. wide, obtuse, entire or irregularly crenate, petiolate; cymes dense, congested at the ends of the branches; fruit ovate, strongly 3-ribbed on one face, 1-ribbed on the other, the ribs elevated.

Cajamarca: Cutervo (*Raimondi* 4673, type).

Valeriana decussata R. & P. Fl. 1: 42. pl. 70, f. b. 1798. *V. clematoides* Graebn. Bot. Jahrb. 37: 437. 1906. *V. melanocarpa* Killip, Journ. Wash. Acad. Sci. 15: 453. 1925.

Plant scandent, suffrutescent toward the base, the stem stout, villosulous or at length glabrous; leaves opposite or fascicled at the nodes, short-petioled, imparipinnate, the leaflets 2-3-jugate, lanceolate, linear-lanceolate, or ovate-lanceolate, acute or acuminate, remotely denticulate or entire, scaberulous above, sparingly to densely cano-tomentose beneath, the terminal leaflet 2-6 cm. long, larger than the lateral ones; panicle up to 40 cm. long, trichotomous and repeatedly dichotomous, the branches spreading or ascending; bractlets acute; fruit ovate, 1.5-2 mm. long, 3-nerved on one face, 1-nerved on the other, densely pubescent, black when mature, the pappus 10-rayed.

Ancash: Tallenga, 3,600-3,800 meters, *Weberbauer 2862* (type of *V. clematoides*).—Huánuco: Huánuco, *Ruiz & Pavón* (type). Mito, 2,700 meters, 1745. Yanahuanca, 3,000 meters, 1211.—Ayacucho: Pampalca, 3,200 meters, *Killip & Smith 23273*. Totorabamba, 3,500 meters, *Weberbauer 5463*.—Cuzco: Paucartambo Valley, *Herrera 1050a*. Cuzco, *Soukup 81*. Cerro de Cusilluyoc, 3,200-3,400 meters, *Pennell 14143*. Lucumayo Valley, *Cook & Gilbert 1311* (type of *V. melanocarpa*).—Department uncertain: Lacuihaurmi, *Savatier 1621*. Pintac, 4,000 meters, *Pearce* in 1867. "Polo-polo," "anamacai."

Valeriana dipsacoides Graebn. Bot. Jahrb. 37: 438. 1906. *V. maxima* Killip, Journ. Wash. Acad. Sci. 21: 351. 1931.

A coarse, erect, glabrous herb, 1.5 to 2.5 meters high, the stem up to 1 cm. wide at the base; leaves coriaceous, bright green, sublustrous, variable, simple, or pinnatifid nearly to the rachis, up to 20 cm. long and 7 cm. wide, entire or obscurely crenulate toward the apex, if simple the blade broadly elliptic to oblanceolate, acuminate, tapering to a narrowly winged petiole, if pinnatifid the terminal segment ovate, the lateral segments 1-3, approximate, oblong or ovate-oblong, up to 3.5 cm. long and 2 cm. wide, obtuse or subacute, much smaller than the terminal one, the petiole short, broadly winged; panicle diffuse, up to 75 cm. long, trichotomous and repeatedly dichotomous; fruit narrowly oblong-lanceolate, 3-nerved and glabrous on one face, 1-nerved and minutely puberulous on the other, the pappus 8-rayed.

Junín: Huacapistana, 1,700-1,900 meters, *Weberbauer 1980* (photo. of type seen); *Killip & Smith 24105* (type of *V. maxima*), 24171.

Valeriana globiflora R. & P. Fl. 1: 43. pl. 65, f. b. 1798. *V. globifera* Pers. Syn. 1: 37. 1805, in error.

A low, caespitose herb with a thickened, fibrillose rootstock; leaves rosulate, fleshy, lanceolate in general outline, 2-4 cm. long, including a short petiole, 7-10 mm. wide, glabrous above, pilose beneath, imparipinnate or deeply pinnatifid, the rachis broad, the leaflets or segments sinuate-dentate or pinnately lobed, obtuse; scapes several, erect or divaricate, up to 10 cm. long, pilose; inflorescence a single terminal head, or spiciform with 1-2 pairs of additional, sessile or short-peduncled heads; bractlets narrowly obovate, blackish, pale at the margin; fruit broadly ovate, densely pilosulous on one face, glabrous on the other, obscurely 1-nerved, pappose.

Huánuco: Cerro de Pasco, 4,400 meters, *Kanehira 274*; *Pearce 21*.—Junín: Bombón, *Ruiz & Pavón* (photo. and fragment of type seen). La Oroya, *Kalenborn 134*.

Valeriana globularioides Graebn. Bot. Jahrb. 37: 445. 1906.

Plant caespitose, the root thick, subrepent, branched toward the apex; leaves mainly basal, obovate-spatulate, 2.5-4 cm. long, including a broad petiole, 7-9 mm. wide, obscurely crenate-dentate toward the apex, coriaceous, glabrous; scapes 3-5 cm. long; inflorescence capitate, solitary, subglobose; flowers perfect, the corolla limb 6-8-lobed; fruit pappose.

Ancash: Huaraz, 4,000 meters, *Weberbauer 2966* (photo. of type seen).

Valeriana globularis Gray, Proc. Amer. Acad. 5: 322. 1862. *V. pygmaea* Graebn. (?) Bot. Jahrb. 37: 446. 1906, non Turcz. 1852.

A low, caespitose herb, glabrous throughout, the rootstock very thick toward the apex, elongate at the base; leaves rosulate, linear or linear-spatulate, 2-4 cm. long including the petiole, the blade up to 3 mm. wide, entire; stems slender, 1-8 cm. high, leafless or rarely bearing 4 small, verticillate leaves; inflorescence a single globose head up to 1.2 cm. in diameter; fruit ovate, obscurely 1-nerved on each face, the pappus 10-12-rayed.

Lima: Río Blanco, 4,500 meters, *2986*. Casapalca, 4,700 meters, *875*.—Junín: Casacancha, *Wilkes Expedition* (type). Mt. La Juntai, 4,700 meters, *Killip & Smith 22078*. Yauli, 4,400 meters, *Weberbauer 367* (type of *V. pygmaea* Graebn.; photo. seen).

Valeriana Grisiana Wedd. Chlor. And. 2: 19. pl. 49, f. A. 1857. *V. linearifolia* Killip, Journ. Wash. Acad. Sci. 18: 500. 1928.

Plant suffrutescent, 30-75 cm. high, branched near the base, the branches erect, finely puberulent or glabrescent, the leaves fascicled

at the nodes in the lower half, opposite in the upper half, linear or linear-lanceolate, 2-4 cm. long, 2-4 mm. wide, obtuse, sessile, or the lower subsessile, entire or obscurely serrulate, subrevolute, glabrous or puberulent; inflorescence cymose-paniculate, the flowers in rather dense clusters, polygamo-dioecious, the bractlets purple toward the apex; fruit lance-ovate, glabrous, 3-nerved on one face, 1-nerved on the other, the pappus 12-rayed.

Cuzco: Cordilleras of Cuzco, *Gay* (type). Cerro de Cusilluyoc, 3,800-3,900 meters, *Pennell 18856* (type of *V. linearifolia*).

Valeriana Hadros Graebn. Bot. Jahrb. 37: 443. 1906.

Stem erect, about 1 meter high, stout, pilose, branched at the base, arising from a thick rootstock; basal leaves cuneate-obovate, 15-20 cm. long, 5-6 cm. wide, tapering to a short, winged petiole, coarsely and irregularly dentate, the teeth denticulate, the cauline leaves much smaller, sessile or subsessile, similarly toothed; panicle pyramidal, up to 15 cm. wide, the flowers in dense, sessile, subglobose clusters, on ascending branches; bractlets broadly obovate.

Cajamarca: Between Hualgayoc and Cajamarca, 4,100-4,200 meters, *Weberbauer 4228* (photo. of type seen).

Valeriana Herrerae Killip, Journ. Wash. Acad. Sci. 16: 572. 1926.

A slender herb, 15-25 cm. high, the root tuberous, fibrillose; stem simple, glabrescent; basal leaves long-petiolate, the blade ovate to orbicular-reniform, 1-2 cm. long, 0.6-2 cm. wide, obtuse or rounded, entire or undulate, membranous, glabrous or sparingly pilosulous, the cauline ones ovate or ovate-oblong, undulate-serrate, petiolate; inflorescence racemiform, the flowers in rather dense clusters; bractlets narrowly linear, less than 1 mm. wide, black, pale at the margin; flowers polygamous, the limb of the staminate ones 1.5-2 mm. wide; fruit lance-oblong, faintly 1-nerved on one face, nerveless on the other, probably pappose.

Cuzco: Hacienda Churú, Province of Paucartambo, 3,600 meters, *Herrera 1016* (type), *1413*. Cerro de Colquipata, 3,900-4,000 meters, *Pennell 18744*. Apurímac Valley, *Herrera 3076b*. "Atoc-atoc."

Valeriana interrupta R. & P. Fl. 1: 42. pl. 67, f. a. 1798. *V. interrupta* var. *minor* Ball, Journ. Linn. Soc. 22: 43. 1885. *V. pedicularioides* Graebn. Bot. Jahrb. 37: 442. 1906.

Plant essentially glabrous throughout; root thickened, woody, usually elongate; stems several, erect, 10-100 cm. high, usually with

only a single pair of leaves; basal leaves up to 15 cm. long including the petiole, and 3 cm. wide, pinnate or deeply pinnatifid, the leaflets or segments highly variable, entire, pinnately lobed, deeply pinnatifid, or interruptedly bipinnate, membranous; inflorescence cymose or cymose-paniculate, compact or diffuse but the flowers clustered; flowers polygamous, the staminate with a limb 2.5–3 mm. wide, the limb of the others up to 1 mm. wide, the styles long-exserted; fruit oblong, 2–2.5 mm. long, more or less turgid when mature, glabrous, obscurely 1-nerved, the pappus 10-rayed.

Lima: Canta, 2,700–3,200 meters, *Pennell 14335*. Antaicocha, 3,600–3,800 meters, *Pennell 14645*. Viso, 2,700 meters, *592*. Río Blanco, 3,500 meters, *Killip & Smith 21552*. Huamantango, *Mathews 513*. Chicla, 3,600–3,900 meters, *Ball* (type of *V. interrupta* var. *minor*). Between Anchi and Chicla, 3,450–3,700 meters, *Weberbauer 208a* (type of *V. pedicularioides*); *Savatier*. Baños, *Wilkes Expedition*.—Junín: Diezmo, *Ruiz & Pavón* (type). Yauli, 4,100 meters, *914*. Huancayo, 3,300–3,500 meters, *Killip & Smith 22128*.

Valeriana interrupta var. *elator* (Graebn.) Killip, comb. nov. *V. pimpinelloides* Graebn. Bot. Jahrb. 37: 442. 1906(?). *V. elator* Graebn. op. cit. 443.

Plant coarser, the leaves larger, the basal up to 35 cm. long including the petiole, and 12 cm. wide, the cauline leaves usually more than 1 pair.

Cajamarca: San Pablo, 2,200–2,400 meters, *Weberbauer 3859* (type of *V. elator*; photo. seen).—Lima: Huaros, 3,300–3,600 meters, *Pennell 14701*. Atocongo, 250–500 meters, *Pennell 14771*. Near Lima, 150 meters, *5856*; *Rose 18587*; *Wilkes Expedition*; *Savatier 1458*. San Bartolomé, *Savatier 1623*. Matucana, 2,400 meters, *122*. Chicla, 3,600–3,900 meters, *Ball*.—Arequipa: Misti, 3,300–3,400 meters, *Pennell 13222*.

This is the commonest species of *Valeriana* along the Lima-Oroya railroad, and apparently extends northward to Cajamarca and southward to Arequipa. The variety merges into the typical form and also, in leaf shape, into *V. pinnatifida*, under which name some of the material cited above was distributed. *V. pimpinelloides*, described from Ocos, Department of Ancash (*Weberbauer 2719*, type, photo. seen), appears to be only a variant with the leaf segments more obovate.

Valeriana isoetifolia Killip, Journ. Wash. Acad. Sci. 15: 456. 1925.

Plant caespitose, the root woody, branched above; leaves rosulate, narrowly linear, almost acicular, 1.5-2.5 cm. long, up to 2 mm. wide, acute, scabrous, minutely ciliolate; stems slender, 8-11 cm. long, finely and sparingly pubescent, bearing at or above the middle 3-4 verticillate leaves; inflorescence a single, subglobose head 1-1.5 cm. in diameter; fruit oblong, 2.5 mm. long, glabrous, the pappus 6-rayed.

Huánuco: Tambo de Vaca, 4,000 meters, 4424 (type). Muña, 3,600-3,800 meters, *Pearce 189*.

Valeriana jasminoides Briq. Ann. Conserv. Jard. Bot. Genève 17: 336. 1914.

A scandent or subscandent herb, pilosulous nearly throughout, or the stem glabrescent; leaves densely fascicled at the nodes, imparipinnate, the leaflets 7-10-jugate, approximate, elliptic or narrowly lanceolate, 1-2 cm. long, 1-7 mm. wide, obtusely acuminate, subsessile, entire or serrulate, the terminal one smaller than or subequaling the lateral ones, sometimes irregularly incised; inflorescence paniculate, trichotomous and dichotomous, the flowers in loose clusters; fruit about 3 mm. long, glabrous or sparingly pilosulous, 3-nerved on one face, 1-nerved on the other, the pappus 12-rayed.

Cuzco: Cerro de Cusilluyoc, 2,200-2,400 meters, *Pennell 13968*; at 3,500-3,800 meters, *Pennell 13896*. Also in western Bolivia.

In the Peruvian material the leaflets are more toothed than in the Bolivian specimens at hand. There is considerable variation in the size and shape of the leaflets, even in the specimens representing a given number.

Valeriana ledoides Graebn. Bot. Jahrb. 37: 445. 1906.

A low, subrepent shrub, the stems ascending, up to 20 cm. high, densely tomentose; leaves oblong or linear-oblong, 1-1.5 cm. long, 3-5 mm. wide, obtuse, entire or obscurely crenate-dentate, tomentose beneath; inflorescence cymose, contracted, hemispheric; fruit oblong, epappose(?).

Huánuco: Monzón, 3,300-3,400 meters, *Weberbauer 3710* (type).

Valeriana lyrata Vahl, Enum. Pl. 2: 4. 1805. *V. remota* Ball, Journ. Linn. Soc. Bot. 22: 42. 1885. *V. oxyrioides* Graebn. Bot. Jahrb. 37: 444. 1906.

Plant glabrous throughout, the stems few or several, erect, 10-50 cm. high, from a thick, woody root; basal leaves usually lyrate with 1 or 2 lobes, occasionally entire and elliptic-oblong,

3-6 cm. long, 0.5-2 cm. wide, long-petioled, the cauline leaves 1-2 pairs, sessile, lanceolate or linear-lanceolate, deeply pinnatifid at least toward the base, 1.5-3 cm. long; inflorescence spicate, the heads all sessile or the lower short-peduncled, contiguous or the lower remote; fruit ovate-lanceolate, about 2.5 mm. long, obscurely 1-nerved on one face, nerveless on the other, the pappus 6-rayed.

Lima: Chicla, 3,600-3,900 meters, *Ball* in 1882 (type of *V. remota*); *Weberbauer* 236 (type of *V. oxyrioides*). Río Blanco, 3,500-4,500 meters, 3007; *Killip & Smith* 21650. Baños, *Wilkes Expedition*.—Without locality, *Jussieu* (type); *Savatier*.

Valeriana Macbridei Killip, Journ. Wash. Acad. Sci. 15: 454. 1925. *V. hirsutissima* Killip, loc. cit.

An erect herb, 60 cm. or more high, the lower part of the stem and the lower leaves densely hirsute, the pubescence scantier upwards; leaves imparipinnate (those of the sterile shoots sometimes simple), the leaflets membranous or subcoriaceous, acute or obtuse, remotely denticulate or serrulate, the terminal leaflet of the basal leaves much larger than the lateral ones, subequal to the lateral ones in the case of the cauline leaves, the lateral leaflets 2-5-jugate, sessile or subsessile; panicle diffuse, trichotomous and repeatedly dichotomous; fruit lance-oblong, 3-nerved and glabrous on one face, 1-nerved and finely pilosulous on the other, the pappus 8-rayed.

Huánuco: Río Santo Domingo, 1,200-1,500 meters, 3686 (type), 4240. Pampayacu, 1,000 meters, 5118 (type of *V. hirsutissima*).

Valeriana malvacea Graebn. Bot. Jahrb. 37: 439. 1906.

An erect or subscandent, suffrutescent herb, 60-100 cm. high, the stem pilosulous; leaves cordate-ovate, 3-9 cm. long, 1.5-5 cm. wide, acuminate, denticulate or subentire, petiolate, densely pilosulous, the hairs stellate on the lower surface; panicle diffuse, trichotomous and dichotomous; fruit oblong-ovate, glabrous; 3-nerved on one face, 1-nerved on the other, the pappus 8-rayed.

Junín: Huacapistana, 2,600-2,800 meters, (*Weberbauer* 2197, type); *Killip & Smith* 24356.

Valeriana Mathewsii Briq. Ann. Conserv. Jard. Bot. Genève 17: 345. 1914. *V. hyalinorhiza* R. & P. sensu HBK. Nov. Gen. & Sp. 3: 331. 1819, non R. & P. *V. laevigata* Willd. ex Steud. Nom. Bot. 869. 1821(?). *V. Humboldtii* Hook. & Arn. in Hook. Bot. Misc. 3: 365. 1833(?).

Plant essentially glabrous throughout; root tuberous; stem solitary, erect, about 40 cm. high; basal and lower cauline leaves

ovate, about 3 cm. long and 2 cm. wide, obtuse, irregularly crenulate, the petioles 3-3.5 cm. long; upper cauline leaves linear-lanceolate, deeply pinnatifid; panicle more than 20 cm. long, the lower branches very slender, about 5 cm. long; fruit (immature) ovate, verruculose-puberulent, the pappus 6(?)-rayed.

Amazonas: Chachapoyas, *Mathews* (type).

I have not seen the Humboldt and Bonpland specimen referred to *V. hyalinorrhiza* R. & P., to which Hooker and Arnott assigned the name *V. Humboldtii*. It presumably came from northern Peru, and the description in the *Nova Genera et Species Plantarum* applies well to the plant later described as *V. Mathewsii*. Graebner cites (Bot. Jahrb. 3: 48) a Humboldt specimen from "Cusa," Peru, in the Berlin herbarium as *V. laevigata* Willd., a manuscript name first listed by Steudel. "Cusa" may be an error for Cascas, in the Department of Cajamarca, a locality visited by Humboldt and Bonpland.

Valeriana micropterina Wedd. Chlor. And. 2: 26. pl. 49, f. B. 1857.

Plant essentially glabrous throughout, caespitose, the root thick; stems erect, 15-40 cm. high, leafless or with 1-2 pairs of pinnate, sessile leaves; basal leaves numerous, linear or linear-lanceolate in general outline, 4-15 cm. long, including a petiole nearly as long as the blade, imparipinnate, the leaflets 12-15-jugate, opposite or subalternate, subequal, ovate or lanceolate, 3-10 mm. long, 2-4 mm. wide, obtuse or subacute, sessile or short-petiolulate; flowers in dense heads forming an interrupted spike, rarely the lower heads on short branches; flowers polygamo-dioecious, the pistillate ones smaller than the others; fruit ovate, obscurely 3-nerved on one face and 1-nerved on the other, the pappus 10-rayed.

Cuzco: Cerro de Cusilluyoc, 3,800 meters, *Pennell 13843*. Also in the mountains of Bolivia.

Valeriana nigricans Graebn. Bot. Jahrb. 37: 442. 1906.

Root fusiform; stem solitary, erect, 40-60 cm. high, subquad-rangular; basal leaves ovate-cordate, 2-5 cm. long and wide, obtuse, obscurely crenate, petiolate, glabrescent, the cauline smaller, ovate, sessile or short-petiolate, crenate, pilose on the nerves beneath; panicle contracted, trichotomous, the flowers subcapitate.

Junín: Huacapistana, 1,900-2,000 meters, *Weberbauer 2001* (photo. of type seen).

Valeriana nivalis Wedd. Chlor. And. 2: 23. pl. 48, f. A. 1857.

Plant caespitose, the root thick, branched above; stems several, erect, 5–10 (rarely up to 20) cm. high, glabrous; leaves mainly basal, oblong-spatulate or obovate-spatulate, the blade 1.5–3 cm. long, subabruptly tapering to the petiole, 5–13 mm. wide, obtuse or rarely subacute, entire or obscurely serrulate, coriaceous, glabrous; flowers in dense, solitary, terminal, globose heads up to 2 cm. in diameter, often 1–2 pairs of similar but smaller, peduncled heads below the terminal one; bractlets broadly oblong-obovate, 3–4 mm. wide; fruit ovate-oblong, glabrous, obscurely nerved, the pappus 6-rayed.

Junín: Hacienda Runatullu, 4,500 meters, *Weberbauer* 6632.—Arequipa: Nevado de Chachani, 4,300–4,600 meters, *Pennell* 13302. Arequipa, *Stafford* 368.—Moquehua: Carumas, 4,500 meters, *Weberbauer* 7316.—Puno: *Lechler* 1708.—Cuzco: Paucartambo Valley, 3,800–4,200 meters, *Herrera* 1092, 2187, 2314. Also in Bolivia.

Valeriana oblongifolia R. & P. Fl. 1: 40. pl. 65, f. a. 1798.

A low herb, with a thickened, fibrillose root; stems several, up to 10 cm. long, erect or spreading, pilose; basal leaves oblong, 2–3.5 cm. long, 1–2 cm. wide, obtuse, abruptly narrowed to the petiole, irregularly dentate, pilose, the cauline leaves a single pair, linear-lanceolate, 1.5–2 cm. long, sessile, lacinate-dentate; inflorescence a single compact corymb; fruit oblong, apparently pappose.

Huánuco: Cerro de Pasco, *Ruiz & Pavón* (photo. of type seen).

Valeriana paniculata R. & P. Fl. 1: 41. pl. 70, f. a. 1798.

Plant hirsute or hirsutulous, the root woody, fibrillose; stem 60–100 cm. high; basal leaves and those of the sterile shoots simple, cordate-ovate to ovate-oblong, 2–7 cm. long, 1.5–3.5 cm. wide, acute or acuminate, cordate or rounded at the base, entire or denticulate, the cauline leaves simple, or imparipinnate with 1–3 pairs of oblong or ovate-oblong lateral leaflets; panicle diffuse, trichotomous and repeatedly dichotomous; fruit lance-ovate, 3-nerved on one face, 1-nerved on the other, glabrous, the pappus 8-rayed.

Huánuco: Muña, *Ruiz & Pavón* (fragment of type seen). Pano, 2,700 meters, 3628. Chaglla, 2,700 meters, 3645. Tambo de Vaca, 4,000 meters, 4408. Huacachi, 2,000 meters, 4185. Between Huánuco and Pampayacu, *Kanehira* 281.—Ayacucho: Choimacota Valley, 3,400–3,500 meters, *Weberbauer* 7525. "Macae."

These specimens vary in the degree of indument, and most of them have some of the cauline leaves simple, not all of them pinnate as shown by the Ruiz and Pavón illustration.

Valeriana Pardoana Graebn. Bot. Jahrb. 37: 440. 1906.

A woody vine, climbing to 3 meters, the internodes elongate; leaves ovate-lanceolate, 4-10 cm. long, 2.5-3 cm. wide, entire, acuminate at both ends, petiolate, sparsely pubescent beneath; inflorescence diffuse, the branches very slender, the flowers rather evenly spaced out on the ultimate, filiform branches; fruit oblong, about 1 mm. long.

Junín: Huacapistana, 1,800-2,000 meters, *Weberbauer 2145* (type).

Valeriana parvula Killip, Journ. Wash. Acad. Sci. 18: 500. 1928.

A low, caespitose herb, essentially glabrous throughout, the root thick; leaves orbicular or ovate-orbicular, 7-10 mm. long, 7-8 mm. wide, rounded at the apex, abruptly narrowed to a winged petiole up to 10 mm. long; stems several, erect or decumbent, 2-3 cm. long, leafless or with a pair of small, linear leaves at the base of the inflorescence; inflorescence a terminal cyme about 1 cm. long and wide; fruit broadly lance-ovate, 1-nerved on one face, obscurely 3-nerved on the other, apparently epappose.

Cuzco: Cerro de Colquipata, 4,000-4,200 meters, *Pennell 13756* (type).

Valeriana Pavonii Poepp. in Poepp. & Endl. Nov. Gen. & Sp. 3: 16. *pl.* 215. 1845.

A vine, woody at least toward the base; leaves ovate-lanceolate or oblong-lanceolate, averaging about 4-6 cm. long and 2.5-3 cm. wide, acuminate at both ends, entire, glabrous, sometimes pilosulous on the nerves beneath; panicle diffuse, the branches pubescent, the flowers usually in clusters of 2 or 3; mature fruit about 3 mm. long and 2 mm. wide, glabrous or finely pilosulous, the pappus 15-20-rayed.

San Martín: Zepelacio, 1,200-1,600 meters, *Klug 3366*. Tarapoto, *Spruce 4356*.—Amazonas: Chachapoyas, *Mathews* in 1830.—Huánuco: Huacachi, 2,000 meters, *4093*. Pampayacu, 1,000 meters (*Poeppig*, type); *5063*.—Junín: Huacapistana, 1,800 meters, *Killip & Smith 24162*.—Ayacucho: Carrapa, 1,000 meters, *Killip & Smith 22464*.—Cuzco: Cerro de Cusilluyoc, 2,300 meters, *Pennell 14023*. Widely distributed in the Andes between 1,000 and 3,000 meters altitude.

This is one of the commonest species of *Valeriana* in the northern Andes, and it is hard to believe that it was not described until 1845. *V. laurifolia* HBK., the identity of which has never been fully established, may well be the earliest name for this species.

Valeriana Pennellii Killip, Journ. Wash. Acad. Sci. 18: 499. 1928.

Plant glabrous throughout, the root thickened, the stem erect, 40–45 cm. high; basal leaves 15–25 cm. long, including a petiole longer than the blade, imparipinnate, the terminal leaflet ovate, 1.5–2 cm. long, obtuse, entire, the lateral leaflets 4–6-jugate, ovate or ovate-lanceolate, 5–8 mm. long, 3–5 mm. wide, sessile, entire, the cauline leaves 1 pair, similar but smaller, subsessile; inflorescence spiciform, the upper heads sessile on the main axis, the lower sessile on short branches; bractlets obovate-spatulate, 1.5–2 mm. wide; fruit oblong, purple-spotted, obscurely 1-nerved on one face, nerveless on the other, the pappus 6-rayed.

Cuzco: La Roya, 4,400–4,500 meters, *Pennell 13510* (type).

Valeriana pilosa R. & P. Fl. 1: 39. pl. 66, f. a. 1798. *V. longifolia* var. *pilosa* Wedd. Chlor. And. 2: 21. 1857.

Plant erect, about 30 cm. high, the rootstock thickened; stem pilose, often very sparingly so or glabrescent; basal leaves numerous, linear-lanceolate or narrowly spatulate, 10–15 cm. long, 0.5–1.5 cm. wide, acuminate or subobtuse, tapering to a poorly defined, sheathing petiole, glabrescent or faintly pilose, the cauline leaves linear, 1–4 cm. long; inflorescence narrow, trichotomously few-branched, the flowers in dense clusters; bractlets obovate; fruit 1.5–2 mm. long, glabrous, obscurely 3-nerved on one face and 1-nerved on the other, the pappus 6-rayed, pilose.

Amazonas: At 2,700–3,300 meters, *Williams 7580*. Chachapoyas, *Mathews 66*.—Huánuco: Mito, 1812, 3352.—Junín: Diezmo (*Ruiz & Pavón*, type).

In the specimens cited above the leaves vary somewhat from those of the Ruiz and Pavón illustration, and the indument is so scant that the specific name *pilosa* is scarcely appropriate. *Macbride 3352* has leaves up to 20 cm. long and 2.5 cm. wide, thus being intermediate between this species and *V. Weberbaueri*, and his *No. 1812* bears a strong similarity to *V. sphaerocephala*.

Valeriana pinnatifida R. & P. Fl. 1: 40. pl. 69, f. b. 1798.

An erect herb, 30 cm. high or more, glabrous throughout except the pubescent nodes and fruit; root tuberous; basal and lower

cauline leaves petiolate, ovate or ovate-lanceolate, entire, irregularly crenate-dentate, or pinnatifid, up to 20 cm. long, including the petiole, and 6 cm. wide, membranous, the upper cauline leaves sessile, pinnatifid, the segments often toothed; inflorescence cymose or cymose-paniculate, the flowers clustered, polygamous, the staminate with a limb about 2 mm. wide, the limb of the others about 1 mm. wide; fruit flattened, broadly ovate, about 2.5 mm. long and 2 mm. wide, densely pilosulous and purple-mottled on both faces, the pappus 10-rayed.

Lima: Lima, *Ruiz & Pavón* (type); *Nation* in 1862. Amancaes, 200–400 meters, *Pennell* 14809; *Mathews* 727. Obrajillo, *Wilkes Expedition*. Matucana, 2,400 meters, 146.—Junín: Huariaca, 2,900 meters, 3101.

This species has often been confused with *V. interrupta*, probably because the leaves of that species often closely resemble those shown in *Ruiz and Pavón's* illustration of *V. pinnatifida*. The *Pennell* and the *Mathews* specimens very closely correspond to the original description of the lowest leaves being entire; they have broadly ovate, densely pubescent fruits, which may serve as an additional differentiating character.

Valeriana plectritoides Graebn. Bot. Jahrb. 37: 441. 1906. *V. oligodonta* Killip, Journ. Wash. Acad. Sci. 21: 351. 1931(?).

Root thickened; stems few or numerous, erect, up to 30 cm. high, essentially glabrous; basal leaves long-petioled, the blades ovate to broadly rhombic-ovate, up to 5 cm. long and 4 cm. wide, obtuse, gradually or subabruptly narrowed to the petiole, irregularly sinuate-dentate, crenate-dentate, or denticulate, flabellate-nerved, glabrous or sparingly ciliate, membranous, the cauline leaves lanceolate or subrhombic, subsessile; flowers in dense, subglobose heads terminal or in long-peduncled, axillary cymes or interrupted spikes; bractlets obovate or linear-spatulate, about 1.5 mm. wide, pale or rufescent; flowers polygamous, the staminate ones the largest, the limb 3–4 mm. wide; fruit ovate-lanceolate, obscurely 1-nerved on one face, nerveless on the other, glabrous, pappose.

Puno: Cuyocuyo, 3,800 meters, *Weberbauer* 928 (photo. of type seen). Sacsahuamán, 3,500–3,600 meters, *Herrera* 2190 (type of *V. oligodonta*). Cuzco, 3,600 meters, *Stafford* 245.

Valeriana plectritoides var. *pallida* Graebn. loc. cit.

Plant slender, many of the stems divergent; flower clusters smaller.

Puno: Cuyocuyo, 3,800 meters (*Weberbauer 928a*, type). Aranca, 4,100–4,300 meters, *Pennell 13438*. Here perhaps belongs also *Pennell 13438a*, which has a lax inflorescence.

Additional collecting must be done in southeastern Peru before final disposition of this species and its close relatives, *V. Herrerae*, *V. sphaerocephala*, and *V. parvula*, can be made. In *V. oligodonta* the leaves are much larger and the inflorescence is more condensed than in the type of *V. plectritoides*. The variety *pallida* is very similar to *Plectritis samolifolia* in general appearance.

Valeriana pycnantha Gray, Proc. Amer. Acad. 5: 322. 1862.

A low, caespitose herb, glabrous throughout, the rootstock woody, thickened; leaves rosulate, linear-spatulate, 2–3 cm. long, 3–5 mm. wide, tapering gradually to a broad petiole, entire, carnosae; stem stout, 1–4 cm. long, bearing near the middle 2 or 3 oblong, sessile, verticillate, carnosae leaves; head solitary, ovoid or subglobose, about 1.5 cm. in diameter; fruit narrowly ovate-oblong, the pappus 5–7-rayed, brownish.

Ancash: Cordillera de Pelagatos, *Weberbauer 7238*.—Lima: Alpacamarca, *Wilkes Expedition* (type). Casapalca, 4,700 meters, *823*.—Without locality, *Maclean*.

Valeriana quadrangularis HBK. Nov. Gen. & Sp. 3: 326. 1819.

Plant suffrutescent, essentially glabrous throughout, the stem quadrangular, 30–40 cm. high; basal leaves ovate-oblong, 3–3.5 cm. long, about 1 cm. wide, obtusely acuminate, entire, or denticulate toward the base, petiolate, the cauline leaves similar, slightly smaller and subsessile; inflorescence cymose-paniculate, rather laxly dichotomous, the branches quadrangular; fruit linear-oblong, the pappus about 14-rayed.

Peru: "Andes," *Humboldt & Bonpland* (type).

This is a doubtful species, as to both the systematic position it should occupy and its place of occurrence. It very closely resembles *V. adscendens* Turcz., an Ecuadorean species. If actually from Peru, it was presumably collected in the northern part. It was described as a shrub, and has been placed next to *V. Grisiana* by Höck (Bot. Jahrb. 3: 49). The stem, however, is not densely leafy as in other species of this group.

Valeriana radicata Graebn. Bot. Jahrb. 37: 436. 1906.

Plant erect, glabrous throughout, 25–50 cm. high, with a thick, elongate root; leaves imparipinnate, 2–5-jugate, the basal about 15 cm. long, the leaflets broadly ovate or suborbicular, entire, the

terminal one about 3 cm. long and 2 cm. wide, the lateral ones much smaller, the cauline leaves with oblong, acute leaflets; panicle rather contracted, the lower branches elongate, the flowers in dense clusters; bractlets linear, less than 1 mm. wide; fruit ovate, pilose on one face, pappose.

Puno: Azángaro (*Weberbauer 465*, type). Near Puno, *Soukup 31*.—Cuzco: Cuzco, *Soukup 52*. "Phusa-phusa."

Valeriana renifolia Killip, Journ. Wash. Acad. Sci. 15: 453. 1925.

Root elongate; stems several, erect, about 65 cm. high, pilose below, glabrescent above; basal leaves subreniform or broadly ovate, 1.5–3.5 cm. long, 2.5–3 cm. wide, rounded, coarsely crenate-dentate or repand-dentate, petiolate, glabrescent or sparsely pilose, the cauline oblong or lanceolate-oblong, about 1.5 cm. long and 7 mm. wide, sessile, irregularly glandular-denticulate; panicle diffuse, the primary branches 2–4 at a node, repeatedly dichotomous, the flowers borne singly; fruit ovate, 1–1.5 mm. long, 3-nerved on one face, 1-nerved on the other, papillose, glabrous, the pappus 8-rayed.

Junín: Huariaca, 2,900 meters, *3099* (type).

Valeriana rufescens Killip, Journ. Wash. Acad. Sci. 21: 352. 1931.

Plant rufo-tomentellous nearly throughout; stems several, from a woody rootstock; leaves lanceolate in general outline, the basal numerous, 8–10 cm. long, including the petiole, 1.5–2 cm. wide, pinnate in the lower half, the leaflets oblong or oblong-spatulate, serrate, pinnatifid in the upper half, the cauline leaves few, similar to the basal, sessile or short-petioled; inflorescence racemose-paniculate or pyramidal, 7–8 cm. long, 2–2.5 cm. wide, the flowers in subglobose clusters on short branches; flowers apparently dioecious, the limb of the staminate ones nearly 4 mm. wide, deeply lobed, that of the pistillate ones 1.5–2 mm. wide; fruit narrowly oblong, obscurely 3-nerved on one face and 1-nerved on the other, the pappus 8-rayed.

Huánuco: Munna (Muña?), 3,800–3,900 meters, *Weberbauer 6786* (type).

Valeriana scandens L. Sp. Pl. ed. 2. 47. 1762.

A slender, herbaceous vine, glabrous throughout; leaves trifoliate, long-petiolate, membranous, the leaflets repand or sinuate-dentate, rarely entire, the terminal one broadly ovate, rounded or

cordate at the base, the lateral ones lance-ovate, oblique; panicles axillary and terminal, lax, diffuse; fruit about 3 mm. long, strongly 3-nerved on one face and 1-nerved on the other, glabrous, the pappus 10-rayed.

Widely distributed in the warmer parts of the American tropics. Represented in Peru by the following variety, also of wide distribution:

Valeriana scandens var. **Candolleana** (Gardn.) C. Muell. in Mart. Fl. Bras. 6, pt. 4: 344. 1885. *V. Candolleana* Gardn. Lond. Journ. Bot. 4: 112. 1845.

Leaves simple, deltoid or ovate, acuminate, coarsely dentate, at least toward the base.

San Martín: Zepelacio, 1,200–1,600 meters, *Klug 3545*.

Valeriana serrata R. & P. Fl. 1: 40. *pl. 68, f. c. 1798*.

Plant caespitose, glabrous throughout, the root about 2.5 cm. thick at the apex, the stems erect, 15–20 cm. high, leafless except for a pair of foliaceous bracts at the base of the inflorescence; basal leaves lanceolate-spatulate, 2–5 cm. long, 0.5–1 cm. wide, acute, serrate toward the apex; inflorescence an interrupted spike, the heads all sessile; fruit oblong, pappose.

Ancash: Cheuchin, *Ruiz & Pavón* (type).

Valeriana sphaerocephala Graebn. Bot. Jahrb. 37: 441. 1906.

Plant essentially glabrous throughout; stem erect, 40–50 cm. high, from a thick rootstock; basal leaves ovate or lanceolate, 1–3 cm. long, 0.6–1.5 cm. wide, obtuse or subacute, entire or with 1–2 coarse, rounded teeth, tapering to a slender petiole up to 6 cm. long, the few cauline leaves linear, short-petioled or subsessile; inflorescence racemiform, the flowers in dense, distinct heads, all but the upper of which are peduncled, sometimes sessile on a short branch at the lower nodes of the inflorescence; fruit black, pappose.

Puno: Sandía, 3,100 meters, *Weberbauer 854a* (type).

Valeriana sphaerophora Graebn. Bot. Jahrb. 37: 440. 1906.

Plant glabrous throughout, the rootstock thick, the stems erect, 50–70 cm. high; basal leaves 10–15 cm. long, including a petiole about as long as the blade, 1–2 cm. wide, imparipinnate, the leaflets usually 3–6-jugate, subequal, entire, incised, or pinnatifid, the cauline 1–2 pairs, similar to the basal, subsessile; inflorescence racemose-paniculate, the upper heads sessile on the main axis, the lower sessile on short branches; fruit lance-ovate, blackish, pappose.

Puno: Sandía, Cuyucuyo, 3,100 meters, *Weberbauer 854* (type).

Valeriana Tessendorffiana Graebn. Bot. Jahrb. 37: 438. 1906.

Plant erect, 1-2 meters high, pilosulous or glabrescent, the root woody, fibrillose; lower leaves and those of the sterile shoots obovate-lanceolate or oblong-lanceolate, 6-10 cm. long, 2-4 cm. wide, acuminate, cordulate at the base or tapering gradually to a narrowly winged petiole, the upper leaves broadly ovate, sessile; panicle diffuse, trichotomous and dichotomous, the branches ascending; fruit lanceolate, about 3 mm. long, subcarinate, 3-nerved and glabrous on one face, 1-nerved and sparingly pilosulous on the other, pappose.

Huánuco: Monzón, 3,200 meters, *Weberbauer 3365* (type). Mito, 2,700 meters, 1399. Panao, 2,700 meters, 3616.

Valeriana thalictroides Graebn. Bot. Jahrb. 37: 443. 1906.

Plant essentially glabrous throughout, the rootstock branched and thickened at the apex, long-tapering at the base, the stems numerous, erect or suberect, 10-40 cm. high; basal leaves long-petioled, linear-lanceolate, 10-20 cm. long, imparipinnate, 10-15-jugate, the leaflets lanceolate or ovate, 5-15 mm. long, 2-5 mm. wide, acute or subobtuse, subentire or with 2-4 teeth, the cauline leaves similar, smaller, subsessile; inflorescence racemose-paniculate or pyramidal, contracted, the flowers in dense heads, contiguous on the branches; fruit ovate, obscurely 1-nerved on one face, nerveless on the other, the pappus 10-rayed.

Lima: Río, 4,500 meters, 2993. Viso, 2,700 meters, 609. Ticlio, 4,600 meters, *Ledig 31*. Casacancha, *Wilkes Expedition*. Between Lima and Tarma, *Isern 2024*.—Junín: Santa Oroya (La Oroya?), 3,700-3,800 meters, *Weberbauer 2580* (type). Huarón, 4,200 meters, 1128. Anchi, *Savatier* in 1877.

Valeriana tomentosa HBK. Nov. Gen. & Sp. 3: 327. 1819. *V. friasana* Schmale, Repert. Sp. Nov. 41: 292. 1937.

A woody vine, the stem terete, cano-tomentose or villous with simple or stellate hairs; leaves cordate-ovate, 2-12 cm. long, 1-7 cm. wide, acuminate or subobtuse, denticulate or subentire, petiolate (petioles 1-2.5 cm. long), pilosulous above, cano-tomentose beneath, the hairs stellate; panicle diffuse, trichotomous and dichotomous; fruit broadly ovate, finely pilosulous, 3-nerved on one face, 1-nerved on the other, the pappus 10-rayed.

Piura: Above Palambla, 2,700-2,800 meters, *Weberbauer 6037*. Frías, Prov. Ayavaca, 2,900 meters, *Weberbauer 6403* (type of *V. friasana*). Also in the mountains of Ecuador.

Valeriana Trichomanes Graebn. Bot. Jahrb. 37: 445. 1906.

A low, caespitose herb, glabrous throughout, with a thickened rootstock; leaves linear in general outline, up to 4 cm. long and 1 cm. wide, petiolate, membranous, imparipinnate, the leaflets ovate or ovate-lanceolate, 2-4-dentate; stem 3-5 cm. high, leafless or with a pair of small, sessile, pinnate leaves; inflorescence a single subglobose or ovoid head; flowers polygamous, the pistillate and perfect ones with a narrow, elongate tube, the staminate with a short, broad tube.

Lima: Chicla, 3,720 meters, *Weberbauer 234* (photo. of type seen).

Valeriana urticaefolia HBK. Nov. Gen. & Sp. 3: 330. *pl.* 275. 1819. *V. erysimoides* Poepp. in Poepp. & Endl. Nov. Gen. & Sp. 3: 16. 1845.

An annual with a tuberous root; stem slender, simple or few-branched, hirsutulous with reflexed hairs, at least toward the base; leaves membranous, rotund-cordate, 2-4 cm. long, rounded or subacute, dentate or sinuate-dentate, petiolate, hirsutulous or glabrescent, the upper cauline ones sessile and usually somewhat smaller; inflorescence paniculate, the branches slender, ascending, 2-3 times dichotomous, the flowers secund, appressed to the rachis; fruit ovate, conspicuously 1-nerved on both faces, pilosulous on one face, glabrous on the other, thick-margined, the pappus 10-12-rayed, tardily developing.

Amazonas: Chachapoyas, *Mathews 3103*.—Cajamarca: Río Tabaconas, 1,200-1,300 meters, *Weberbauer 6260*.—Huánuco: Cochero (*Poeppig*, type of *V. erysimoides*). Piedra Grande, 1,500 meters, *3699*.—Department uncertain: San Carlos, *Mathews 1543*.—Without locality: *Mathews 2073*. Also in Colombia and Ecuador.

Valeriana variabilis Graebn. Bot. Jahrb. 37: 443. 1906.

An erect herb, 10-30 cm. high, glabrous throughout, with an elongate, thickened root; basal leaves numerous, long-petiolate, imparipinnate, the leaflets ovate or obovate, dentate, the terminal one 2-4 cm. long, 1-2 cm. wide, the lateral ones 3-5-jugate, much smaller, the lower pairs remote, the cauline leaves few, smaller and short-petioled; flowers in subglobose clusters which are solitary or numerous and paniculate.

Puno: Pucará, 3,700 meters, *Weberbauer 423* (photo. of type seen).

The above diagnosis is derived from the original description and the photograph of the type. Several other specimens, listed below,

seem to represent a robust form of this and are tentatively referred here. The plants attain a height of 2.5 meters, according to the collectors' notes; the leaves are up to 25 cm. long, the leaflets as much as 8 cm. long and 4 cm. wide; the inflorescence is diffusely paniculate. The general appearance of some of the specimens is much like that of *V. Warburgii*. The fruit is uniformly broadly ovate, abruptly tapering to a beak, and is densely pilosulous.

Ayacucho: Between Huanta and Pargora, 3,000 meters, *Killip & Smith 22184*.—Cuzco: Cuzco, *Soukup 253*. Pisac, 3,600–3,700 meters, *Pennell 13730*. Colquipata, 3,200–3,300 meters, *Pennell 13783*. Urubamba Valley, 3,000 meters, *Cook & Gilbert 1166*; *Herrera 1365, 3443*.

Valeriana verrucosa Schmale, Repert. Sp. Nov. 42: 293. 1937.

An erect herb, up to 150 cm. high, essentially glabrous throughout, the root napiform; basal and cauline leaves similar, membranous, imparipinnate, the leaflets 3–5-jugate, ovate-lanceolate or oblong, remotely serrate or subentire, the terminal one up to 5 cm. long, the lateral smaller; panicle diffuse, trichotomous and repeatedly dichotomous; fruit broadly ovate, about 2 mm. long and 1.5 mm. wide, strongly verrucose, the pappus 10-rayed.

Huancavelica: Colcabamba, 2,000–2,100 meters, *Weberbauer 6467* (type).—Ayacucho: Carrapa, 1,500 meters, *Killip & Smith 22378, 22410, 22429*.

Valeriana virgata R. & P. Fl. 1: 42. pl. 66, f. b. 1798.

A much branched shrub up to 100 cm. high, minutely puberulent throughout, rarely glabrescent; stem quadrangular, leafy, the branches virgate, erect; leaves imparipinnate, the leaflets numerous, narrowly linear and entire, or digitate-lobed, obtuse; inflorescence cymose or cymose-paniculate, usually contracted; flowers polygamous, the staminate the larger; fruit ovate, 3-nerved on one face, 1-nerved on the other, glabrous, the pappus 12-rayed.

Lima: Province of Canta, *Ruiz & Pavón* (photo. and fragment of type seen).—Chaglla, 3,200 meters, *Weberbauer 6690*.—Department uncertain: Pintac, 3,900 meters, *Pearce* in 1867.

Valeriana Warburgii Graebn. Bot. Jahrb. 37: 489. 1906.

An erect herb, 2 meters high or more, the stem and leaves sparingly pilose or glabrescent; basal and cauline leaves similar, imparipinnate, the leaflets interruptedly 5–8-jugate, opposite, or the lower alternate, broadly ovate to ovate-lanceolate, up to 9 cm. long and

5 cm. wide, acuminate or subobtusely, coarsely dentate or repand-dentate, membranous, sessile, or the lower petiolulate; panicle diffuse, trichotomous and repeatedly dichotomous; fruit lance-ovate, 3-nerved on one face, 1-nerved on the other, glabrous, the pappus 8-rayed.

Huánuco: Yanano, 2,400 meters, 3797.—Ayacucho: Carrapa, 1,500 meters, *Killip & Smith 22410*.—Moquehua: Carumas, 3,100 meters, *Weberbauer 7482*.—Puno: Sandía, 2,400 meters, *Weberbauer 555* (type).

Valeriana Weberbaueri Graebn. Bot. Jahrb. 37: 438. 1906.

Stem stout, 1-1.5 meters high, strongly ribbed, pilose; leaves lanceolate or linear-lanceolate, tapering to an obtuse apex, gradually narrowing at the base to a broad, sheathing petiole, coriaceous, glabrous above, densely reflexed-pilose on the midnerve beneath, the basal leaves 30-40 cm. long, 2-4.5 cm. wide, the cauline 7-15 cm. long, 1-3.5 cm. wide; inflorescence densely paniculate, the panicle up to 40 cm. long, trichotomous, the flowers in dense, subglobose clusters; bractlets broadly obovate, 2.5-3 mm. wide; fruit oblong, obscurely 1-nerved on one face, closely 3-nerved on the other, the pappus 6-rayed.

Huánuco: Monzón, 3,400-3,500 meters, *Weberbauer 3325* (type). Tambo de Vaca, 3,950 meters, 4427.

4. STANGEA Graebn.

Cespitose, acaulescent or subacaulescent, perennial herbs, the roots fusiform and thickened at the apex, or stoloniferous; leaves densely rosulate, fleshy; inflorescence sessile or terminating a short, thick scape, densely flowered, flat-topped, hemispheric, or subglobose; bracts cuneate or cuneate-obovate; flowers polygamous (always?); corolla limb 5-parted, the segments rounded; anthers linear or linear-oblong, sessile or short-filamentose; fruit nerveless, pappose.

The present treatment of this genus is derived almost wholly from Graebner's account. I have seen none of the specimens which he cites, though photographs of all but one of the type specimens are at hand. Further collecting will perhaps show that the lines of differentiation between some of the species are too fine.

Plant densely cespitose, without stolons.

Leaves oblong or elliptic-oblong, acute or subobtusely, sessile.

S. Ericae.

Leaves subrotund, ovate, or cordate, obtuse or rounded, abruptly narrowed to a petiole.

Leaves averaging 1-1.5 cm. wide; flowers rose...*S. Henrici*.

Leaves averaging 1.5-2.5 cm. wide; flowers yellowish white.

S. rhizantha.

Plant loosely caespitose, stoloniferous.

Leaves obtuse, glabrous, the petioles up to 3 cm. long; inflorescence subglobose.....*S. Paulae*.

Leaves acuminate, pilosulous, the petioles up to 1 cm. long; inflorescence hemispheric.....*S. Wandae*.

Stangea Erikae Graebn. Bot. Jahrb. 37: 450. 1906.

Plant densely caespitose, forming a hemispheric mass about 4 cm. high; leaves oblong, 0.8-2 cm. long, 4-6 mm. wide, acute or subobtuse, sessile; inflorescence very dense, shorter than the leaves; bracts obovate, mucronate.

Ancash: Yanganuco, near Yungai, 4,600-4,700 meters, *Weberbauer 3272* (photo. of type seen).

Stangea Henrici Graebn. Bot. Jahrb. 37: 449. 1906.

Root strongly thickened; leaves subrotund, 2-5 cm. long including a broadly linear, sheathing petiole, 1-1.5 cm. wide; stem very short or up to 3 cm. long; inflorescence about 1 cm. high and 5 cm. wide; bracts cuneate or obcordate; flowers rose; fruit oblong, about 3 mm. long, blackish.

Ancash: Huaraz, 4,500 meters (*Weberbauer 2962*, type). "Corihuájaj."

Stangea Paulae Graebn. Bot. Jahrb. 37: 450. 1906.

Plant loosely caespitose, the root stoloniferous; leaves laxly clustered, obovate or oblong-obovate, 1-1.5 cm. long, 4-5 mm. wide, obtuse, tapering gradually to a slender petiole 1.5-3 cm. long; inflorescence subglobose, sessile or short-peduncled; corolla tube gradually dilated toward the apex.

Puno: Ananca, Province of Sandía, 4,700-4,900 meters, *Weberbauer 1036* (photo. of type seen).

Stangea rhizantha (A. Gray) Killip, comb. nov. *Valeriana rhizantha* A. Gray, Proc. Amer. Acad. 5: 322. 1862. *Stangea Emiliae* Graebn. Bot. Jahrb. 37: 449. 1906.

Plant densely caespitose, the root fusiform, much thickened in the upper part; leaves closely rosulate, spatulate-rotund, cordate,

or broadly ovate, 1.5–4.5 cm. long including a broad petiole, 1–2.5 cm. wide, rounded at the apex; inflorescence very dense, sessile, flat-topped or depressed, 2–4 cm. wide; flowers yellowish white; fruit oblong, about 1 mm. long, the pappus 5-rayed.

Lima: Alparmarca, *Wilkes Expedition* (type). Río Blanco, 4,600 meters, 3030. Alpamina, 4,500 meters (*Weberbauer 5090*).—Junín: Hacienda Arapa, near Yauli, 4,400 meters, *Weberbauer 276* (photo. of type of *S. Emiliae* seen).

Stangea Wandae Graebn. Bot. Jahrb. 37: 450. 1906.

Plant stoloniferous; leaves subrosulate, ovate or lanceolate, 6–10 mm. long, 3–4 mm. wide, acuminate, pilosulous, verrucose, the petiole 5–10 mm. long, pilose; inflorescence short-peduncled, hemispheric, 1–2 cm. wide; corolla tube constricted at the apex.

Lima: Above Lima, 4,500 meters, *Weberbauer 3755* (photo. of type seen), (5116).

5. BELONANTHUS Graebn.

Subacaulescent, caespitose, perennial herbs, the caudex short, simple or few-branched, densely clothed with the persistent, coriaceous, stramineous, glabrous, sheathing bases of the old leaves; leaves rosulate, linear or linear-spatulate, thick, vaginate; cymes short-peduncled or subsessile, the 2 involucre bracts partially connate; flowers polygamous, epappose, the corolla with a long, slender tube, the limb 3-lobed.

This genus has recently been monographed by Schmale, Notizbl. Bot. Gart. Berlin 13: 23–26. 1936, and the present treatment is derived largely from it; few of the specimens there cited have been examined.

Inflorescence distinctly peduncled, the peduncle at least 2 cm. long.

B. longitubulosus.

Inflorescence subsessile, the peduncle much less than 2 cm. long.

Caudex very thick, scarcely branched but bearing 2–3 rosettes of leaves.....*B. angustifolius*.

Caudex slenderer, with several branches.

Leaves glabrous.....*B. crassipes*.

Leaves pubescent.

Leaves densely pilose-hispid; corolla lobes obtuse.

B. hispidus.

Leaves sparingly pilose and slightly ciliate; corolla lobes acute.....*B. spathulatus*.

Belonanthus angustifolius Schmale, Notizbl. Bot. Gart. Berlin 13: 25. 1936.

Plant up to 3 cm. high, the caudex scarcely branched, bearing 2-3 rosettes, the leaves linear-lanceolate, 1-2 mm. wide in the upper part, acute, sessile, entire, glabrous above the middle, ciliate below the middle, membranous; peduncle 5-10 mm. long; flowers sessile; corolla tube up to 6 mm. long.

Huánuco: Monzón, 3,700-4,000 meters (*Weberbauer 3321*, type). Also reported from Bolivia.

Belonanthus crassipes (Wedd.) Graebn. Bot. Jahrb. 37: 447. 1906. *Phyllactis crassipes* Wedd. Chlor. And. 2: 29. pl. 47, f. A. 1857. *Valeriana crassipes* Höck, Bot. Jahrb. 3: 56. 1882.

Plant about 6 cm. high, glabrous throughout; leaves linear or slightly spatulate, 2-3 cm. long, 1.5-2 mm. wide, acute, subcoriaceous; cymes sessile or with a very short peduncle; flowers sessile, the corolla lobes subacute.

Ancash: Huaraz, 4,000 meters (*Weberbauer 2965*). Type from Bolivia. "Huencormake."

Belonanthus hispidus (Wedd.) Graebn. Bot. Jahrb. 37: 447. 1906. *Phyllactis hispida* Wedd. Chlor. And. 2: 29. 1857. *Valeriana exscapa* Griseb. Berb. Amer. Aust. 57. 1857, name only. *V. hispida* Höck, Bot. Jahrb. 3: 56. 1882, non Turcz. 1852. *V. niphobia* Briq. Ann. Conserv. Jard. Bot. Genève 17: 347. 1914.

Plant 3-5 cm. high; leaves in densely fascicled rosettes, linear or slightly spatulate, 2-3 cm. long, excluding the sheaths, up to 2 mm. wide, acute or subacute, entire, submembranous, long-retrorse-ciliate and usually densely pilose-hispid; flowers sessile, the corolla lobes about 1 mm. long, obtuse.

Puno: Moho, Prov. Huancané, 3,100 meters, *Shepard 87*. Ayapata, *Lechler 1962* (photo. of specimen labeled "*V. exscapa* Griseb." seen). Type from Bolivia.

Belonanthus longitubulosus Schmale, Notizbl. Bot. Gart. Berlin 13: 25. 1936.

Plant up to 7 cm. high; leaves linear-spatulate, 3-6 cm. long, 0.5-3 mm. wide, acute, entire, densely short-pilose; inflorescence laxly capitate, the peduncle 2-2.5 cm. long; flowers sessile, the corolla tube 8-9 mm. long, the lobes oblong, 2 mm. long, rounded at the apex.

Cajamarca: Hualgayoc, 4,000–4,100 meters (*Weberbauer 3989*).—
Junín: Palca, 3,200–3,400 meters (*Weberbauer 2491*, type).

Belonanthus spathulatus (R. & P.) Schmale, Notizbl. Bot.
Gart. Berlin 13: 26. 1936. *Valeriana spathulata* R. & P. Fl. 1: 40. pl.
68, f. b. 1798. *Phyllactis spathulata* Pers. Syn. 1: 39. 1805.

Plant up to 5 cm. high and 10 cm. wide; leaves linear or spatulate,
2–3 cm. long, 1–5 mm. wide, obtuse, sparingly pilose, slightly ciliate;
peduncle stout, 2–3 mm. long; flowers sessile, the corolla tube 5–7
mm. long, the lobes ovate, nearly 2 mm. long, 1 mm. wide, acute.

Libertad: Huamachuco, 4,650 meters, *Weberbauer 7013*.—Lima:
Río Blanco, 4,500 meters, 3011.—Huánuco: Mito, 3,300 meters,
1898.—Junín: Bombón, *Ruiz & Pavón* (type).

6. PHYLLACTIS Pers.

Acaulescent or subacaulescent, cespitose herbs, the root fusiform,
becoming very thick toward the apex; leaves in dense rosettes,
linear to oblong-spatulate, the sheathing base persisting; peduncles
numerous and very short and stout or rather few and elongate and
slenderer, the bracts connate toward the base, the flowers sessile,
polygamous; corolla tube very short (not more than 4 mm. long), the
lobes 3, rarely 4.

Peduncles 10–20 cm. long; bracts more than 2; leaves oblong-
spatulate, more than 1 cm. wide, with many parallel nerves.

P. convallarioides.

Peduncles less than 1 cm. long; bracts 2; leaves linear or linear-
lanceolate, not more than 1 cm. wide, 1-nerved.

Leaves linear-lanceolate, rigid, glabrous throughout. *P. rigida*.

Leaves narrowly linear or linear-subulate, subcoriaceous, ciliate
in the lower half. *P. tenuifolia*.

Phyllactis convallarioides Schmale, Repert. Sp. Nov. 41: 294.
1937.

Root very stout, up to 2 cm. thick; leaves oblong-spatulate,
6–12 cm. long, 1.5–3 cm. wide, subobtuse, entire, or obscurely
crenulate toward the apex, coriaceous, conspicuously parallel-
nerved, ciliate and sparingly pilose in the lower half, glabrescent in
the upper; peduncles 10–20 cm. long; bracts several, slightly con-
nate; flowers in a compact cyme, sessile; corolla tube 3–4 mm. long,
the limb 3–4-lobed, the lobes obtuse; fruit elliptic, 3–4 mm. long,
glabrous.

Piura: Huancabamba, 3,400–3,500 meters, *Weberbauer 6089* (type).

Phyllactis rigida (R. & P.) Pers. Syn. 1: 39. 1805. *Valeriana rigida* R. & P. Fl. 1: 39. pl. 65, f. c. 1798.

Plants in dense, stemless tufts, the leaves radiate and flat on the ground, the blades linear-lanceolate, up to 5 cm. long and 1 cm. wide, entire, 1-nerved, pungent, rigid, glabrous, stramineous; peduncles stout, up to 1.5 cm. long, connate; corolla tube very slender, about 3 mm. long, the limb 3-lobed, the lobes triangular-ovate.

Cajamarca: Micuibamba, 4,500 meters, *Humboldt & Bonpland*.—Huánuco: Cerro de Pasco, 4,300 meters, 3075.—Junín: Bombón (*Ruiz & Pavón*, type). Tarma, *Weddell*.—Apurímac: Sorococha Pass, 4,400 meters, *West 3728*. Also in Colombia and Ecuador.

Phyllactis tenuifolia (R. & P.) Pers. Syn. 1: 39. 1805. *Valeriana tenuifolia* R. & P. Fl. 1: 39. pl. 65, f. d. 1798.

Similar to *P. rigida* in habit and in the inflorescence; leaves narrowly linear or linear-subulate, 6–10 cm. long, 2–3 mm. wide, pungent, entire, 1-nerved, glabrous, ciliate in the lower half, subcoriaceous.

Lima: Huarochiri (*Ruiz & Pavón*).—Huánuco: Mito, 2,700 meters, 1796.—Junín: Huasa-huasi, *Dombey* or *Ruiz & Pavón* (type).

CUCURBITACEAE. Gourd Family

To tell the story of the gourd or calabaza would be nearly to trace the story of mankind from the time of its written record, for the first dish and the first bottle may well have been fashioned from a fruit of some form of the vine botanists have named *Lagenaria siceraria*, or others (in Peru) “poro,” “matha,” or “mati,” the last two in the Quichua language. Records in literature exist from the ninth century, and there is a picture that dates from 1484. In Peru itself the fruit and seeds have been found in ancient graves of the Incas (Rochebrune, Act. Soc. Linn. Bordeaux 33: 347. 1879; Costantin & Bois, Rev. Génér. Bot. 22: 259. 1910; Safford, Smithsonian. Rept. 1916: 409. 1917); nevertheless the origin of the species remains obscure—cf. Harms, Pflanzenreich IV. 275, pt. 2: 206–208. 1924, who has brought together a remarkable fund of data on the gourd in all its phases.

Besides the usual use in Peru of gourds for vessels of all sorts, I found a small variety commonly carried by coca chewers to contain the supplementary lime. Such gourds have been found with

Peruvian mummies (Safford), and one of the modern examples brought back by a Field Museum expedition is to be seen at that institution. A large gourd seemed regularly to serve, from the coast to the interior, as the container for the popular beverage *chicha*.

Besides the gourd, the well known cultivated members of the family, such as *Cucurbita moschata* Duch., squash, and *C. Pepo* L., the "zapallo" or "pasin huara" (Tessmann) and "calabazas"—one of these may be the "calabaza vinatera" of Ruiz and Pavón, "which has a very good taste cooked"; *Cucumis Melo* L., "melón," and *C. sativus* L., cucumber, are, in my experience, not generally known or appreciated. Herrera found the squash adventive in the Valle del Urubamba, Tessmann the zapallo in Loreto. Spruce, it may be remarked, noted the native names "boga-boga" and "caiwa" for two Amazonian species not yet placed.

The following compilation, as the references indicate, is largely copied from the works of Cogniaux and Harms. It is with pleasure that I acknowledge the latter's willingness to prepare an account of the family for this work, and I regret that his duties as editor of *Pflanzenfamilien* finally did not permit him to do so. Other contributions to the part being ready, I had to attempt it myself, but, as a matter of fact, keys had been tentatively made for the collections in Dahlem, thanks to Professor Harms, who named all my own material and gave me access to all of that in his care. These facts are mentioned to explain any new interpretations.

As the genera are at best difficult to distinguish, three keys to them have been provided: one, completely artificial, leads, with a little experience, to most, at least, of the Peruvian species; another is according to Engler; and a third is an adaptation of that with Cogniaux's, for it has seemed to me that to regard the nature of the anthers, in view of their variation, as indicating the natural division of the family may not be correct, and one more nearly approaches, at least as regards the Peruvian groups, a lineal arrangement that appears natural by employing the position of the ovules as basic.

The student should be cautioned that filaments when short sometimes are not readily obvious; also, that occasionally stamens may be lightly coalescent in an early stage when really "free." In general, for simplicity, I have followed the earlier use of the term "calyx" (with sepals) to designate the receptacle, which term even modern authors have not always employed consistently.

Artificial key

Flowers always minute or small and all or at least part of them paniculate.

Stamens 5.

Flowers monoecious, the pistillate solitary in the axils with the staminate.....17. *Cyclanthera*.

Flowers dioecious, all paniculate.

Leaves 3-5-foliolate or simple and subentire.2. *Siolmatra*.

Leaves angulately or palmately lobed.....1. *Fevillea*.

Stamens 3.

Flowers rotate; stamens sessile or subsessile; leaves, if palmately lobed, shallowly so.

Filaments connate.

Leaves palmately angled or lobed.....18. *Echinocystis*.

Leaves entire.....5. *Pseudosicydium*.

Filaments free (anthers sometimes connate in a ring); leaves ovate, entire or angled-deltoid.

Leaves usually cordate; flowers all paniculate, dioecious.
3. *Sicydium*.

Leaves not at all cordate; pistillate flowers geminate.

4. *Pteropepon*.

Flowers more or less campanulate; filaments linear; leaves usually deeply palmate-lobed.....19. *Cayaponia*.

Flowers often large, sometimes small or minute but not paniculate, often racemose or corymbose at the summit of a peduncle, sometimes solitary.

Flowers more or less elongate-cylindric or ventricose, rarely sub-campanulate; anthers sessile, dorsifixed or the filaments connate in *Elaterium*; staminate flowers typically racemose or spicate at ends of long peduncles.

Filaments wanting.

Style not ringed at the base; stamens 2.

Anther cells not flexuose; usually scandent herbs, glabrous to pilose.....7. *Anguria*.

Anther cells flexuose; a densely villous liana.

8. *Dieudonnaea*.

Style ringed or cupped at the base; stamens 3.

9. *Apodanthera*.

- Filaments connate; flowers linear, with narrow, spreading lobes, suggesting Apocynaceae.....16. *Elaterium*.
- Flowers campanulate or broadly cupulate; anthers not sessile, the filaments sometimes connate; staminate flowers sometimes racemose but usually not long-peduncled.
- Calyx tube not inflated.
- Leaves deeply divided except in *Luffa*.
- Corolla 5-lobed, the broad calyx lobes refracted.11. *Sicana*.
- Corolla deeply 5-parted or with free petals.
- Flowers large; anthers free or at first coherent; seeds many, horizontal.
- Staminate flowers solitary (in the Peruvian species).
- Stamens inserted at the throat; leaf lobes not lobed.
15. *Momordica*.
- Stamens inserted in the tube; leaf lobes lobed.
13. *Citrullus*.
- Staminate flowers racemose.....14. *Luffa*.
- Flowers medium-sized; anthers coherent; seeds erect.
19. *Cayaponia*.
- Leaves entire to more or less lobed (cf. *Luffa* with larger flowers); flowers small to minute.
- Staminate flowers solitary or fasciculate; seeds erect; leaves entire or nearly so.....20. *Selysia*.
- Staminate flowers often racemose or corymbose; leaves most often lobed; seeds various.
- Filaments free, sometimes short.
- Leaves entire or more or less lobed; seeds horizontal.
10. *Melothria*.
- Leaves palmately lobed; seeds erect....19. *Cayaponia*.
- Filaments connate or the anthers connate or annulate, sometimes solitary.
- Leaves various; anthers annulate, capitately connate or solitary; seeds ascending.....17. *Cyclanthera*.
- Leaves angulate-lobed; filaments connate, the anthers often free.
- Flowers sordid or greenish; fruit coriaceous; seeds pendulous.....6. *Sicyos*.

Flowers white; fruit dry or baccate; seeds ascending.

18. *Echinocystis*.

Calyx tube inflated; flowers all solitary; seeds horizontal.

12. *Calycophysum*.

Technical key based on Engler's tribal key

A. Anther cells not horizontally annulate.

B. Stamens free or connate toward the base.

Stamens 5, rarely 4 (cf. *Luffa*).

Ovary 6 3-celled; fruit indehiscent; staminate sepals 5; leaves angulately or palmately lobed.....1. *Fevillea*.

Ovary imperfectly 3-celled; fruit apically dehiscent; staminate sepals 3-5; leaves 3-5-foliolate or entire. 2. *Siolmatra*.

Stamens 3, rarely 2.

Anther cells straight or slightly curved.

Seeds horizontal.

Style inserted in a cup or ring.

Calyx (receptacle) often nearly cylindric; anthers sessile, dorsifixed.....9. *Apodanthera*.

Calyx campanulate; anthers basifixed...10. *Melothria*.

Style without a disk at the base or this obscure.

7. *Anguria*.

Seeds erect; leaves entire or 3-lobed.....20. *Selysia*.

Seeds pendulous.

Flowers dioecious, all paniculate; anthers not sessile; fruit globose.....3. *Sicydium*.

Flowers monoecious, the pistillate geminate; anthers sessile; fruit compressed, margined...4. *Pteropepon*.

Anther cells contorted, conduplicate-triplicate.

Calyx inflated, the lobed corolla included or nearly so.

12. *Calycophysum*.

Calyx not definitely inflated.

Stamens 3(-5); herbs.

Anther cells longitudinally triplicate; ovules ascending.

19. *Cayaponia*.

Anther cells flexuous; ovules horizontal.

Corolla 5-lobed, the broad calyx lobes refracted.

11. *Sicana*.

Corolla deeply 5-parted or with free petals.

Staminate flowers solitary (in Peruvian species).

Stamens inserted at the throat. 15. *Momordica*.

Stamens inserted in the tube. 13. *Citrullus*.

Staminate flowers racemose. 14. *Luffa*.

Stamens 2; a densely villous liana. 8. *Dieudonnaea*.

B. Stamens connate (cf. *Pteropepon*).

Flowers monoecious; leaves angulate or lobed. 6. *Sicyos*.

Flowers dioecious; leaves entire. 5. *Pseudosicydium*.

A. Anther cells more or less horizontally annulate.

Fruit oblique, gibbous.

Calyx (receptacle) cylindric. 16. *Elaterium*.

Calyx cup-like or shallower. 16. *Cyclanthera*.

Fruit not gibbous; calyx campanulate or shallow. 8. *Echinocystis*.

Technical key based on ovules and stamens

A. Ovules pendulous.

Filaments free or wanting.

Anthers not sessile.

Stamens 5.

Ovary 6-3-celled. 1. *Fevillea*.

Ovary imperfectly 3-celled. 2. *Siolmatra*.

Stamens 3. 3. *Sicydium*.

Anthers sessile, connate in a ring. 4. *Pteropepon*.

Filaments connate.

Flowers monoecious; anthers capitulate. 6. *Sicyos*.

Flowers dioecious; anthers spreading. 5. *Pseudosicydium*.

A. Ovules horizontal; filaments free or wanting.

Anther cells straight or slightly curved.

Anthers sessile.

Style inserted in a cup or disk. 9. *Apodanthera*.

Style not annulate at the base or indistinctly so. 7. *Anguria*.

Anthers not sessile, the filaments sometimes short. 10. *Melothria*.

Anther cells flexuose.

Calyx inflated. 12. *Calycophyllum*.

Calyx not inflated.

- Anthers sessile..... 8. *Dieudonnaea*.
 Anthers not sessile but the filaments often short.
 Stamens inserted in the tube.
 Corolla 5-lobed; calyx lobes broad..... 11. *Sicana*.
 Corolla 5-parted; calyx lobes narrow.
 Staminate flowers solitary..... 13. *Citrullus*.
 Staminate flowers racemose..... 14. *Luffa*.
 Stamens inserted in the throat..... 15. *Momordica*.
 A. Ovules ascending or erect or, if rarely horizontal, the filaments connate.
 Filaments connate, the 3 anthers horizontal, not annulate.
 5. *Pseudosicydium*.
 Filaments or anthers connate, the cells flexuous or annulate.
 Fruit oblique, gibbous.
 Calyx (receptacle) cylindric..... 16. *Elatarium*.
 Calyx cup-like or shallower..... 17. *Cyclanthera*.
 Fruit not gibbous..... 18. *Echinocystis*.
 Filaments free.
 Anther cells longitudinally triplicate..... 19. *Cayaponia*.
 Anther cells not triplicate, straight..... 20. *Selysia*.

1. FEVILLEA L.

Reference: Cogniaux, Pflanzenreich IV. 275, pt. 1: 4-9. 1916.

Lianas with thin, angulately or palmately lobed leaves and small, dioecious flowers all borne in panicles. Flower parts 5, the petals and sepals spreading. Filaments recurving; anthers 1-celled, straight. Pistillate flowers with or without staminodia. Styles 3; ovary perfectly 3-celled; ovules pendulous. Fruit indehiscent; seeds roundish, compressed.—The name, often written *Feuillea*, is in memory of Ludovic Feuillée, born in 1660, important early contributor to knowledge of the flora of Peru and Chile.

Fevillea cordifolia L. Sp. Pl. 1013. 1753; 7.

A woody vine with smooth, glabrous, often reddish branches and glabrous, coriaceous, subrotund or ovate leaves; petioles 3-7 cm. long; leaves without basal glands, somewhat cordate, entire or more or less angulate, 10-15 cm. long, about 10 cm. wide, rather ash-colored beneath; tendrils elongate, bifid; inflorescence narrow or much branched, with the peduncle 2-several dm. long, shortly

villous-puberulent or glabrate; pedicels filiform, 2-6 mm. long; flowers to nearly 4 mm. wide; calyx glabrous, the ovate lobes 2 mm. long, the broader, yellowish or flesh-red (Klug) petals twice as long; fruit globose, papillose, 10-12 cm. thick.—Var. *hederacea* (Poir.) Cogn. has very coriaceous, most often deeply three-lobed leaves. Neg. 8969. Bolivian species to be expected in southern Peru are *F. pergamentacea* (Karst.) Cogn. (Neg. 8971) and *F. Harmsii* (Kuntze) Schum. (Neg. 8970); both are biglandular at the truncate or scarcely emarginate leaf base, the leaves of the former often 8-lobed, acuminate, of the latter entire or obscurely lobed. The petals of *F. cordifolia* bear medially within a prominent, scythe-shaped flange or crest. Illustrated, Baillon, Hist. Pl. 8: 378.

San Martín: Juanjui, 400 meters, in forest, flowers cream and rose, *Klug 3825*. Tarapoto, *Spruce 4031*. Juan Guerra, near Tarapoto, *Ule 6549*, the var. Pongo de Cainarachi, *Klug 2749* (det. Baehni).—Huánuco: Chinchao, *Poeppig 1409*. Cochero, *Poeppig 1409*. Tocache, *Poeppig 2018*.—Río Acre: *Ule 9875*; *Krukoff 5699, 5610*.—Loreto: Santa Rosa, 135 meters, *Killip & Smith 28990*; corolla greenish white; filaments yellow. Balsapuerto, 220 meters, *Klug 3090*. Above Iquitos, *Tessmann 4544*. Balsapuerto, *Klug 3090* (det. Standley). Middle Río Blanco, *Tessmann 3023* (det. Harms). Aguayate, *Tessmann 3158* (det. Harms). Patria, *Tessmann 4944* (det. Harms). North to Venezuela, West Indies, and Central America.

2. SIOLMATRA Baill.

Reference: Cogniaux, Pflanzenreich IV. 275, pt. 1: 28-31. 1916.

Similar to *Fevillea*, but the ovary imperfectly 3-celled, the 1-celled fruit dehiscent apically, the seeds winged. Sepals of the staminate flowers often only 3.—Probably not distinct from *Zanonia* L., the type of a group of genera needing realignment.

Leaves simple.....*S. simplicifolia*.

Leaves compound.

Leaves 5-foliate.....*S. pentaphylla*.

Leaves 3-foliate.

Petioles glabrous, unappendaged.....*S. brasiliensis*.

Petioles auriculate-glandular, appendaged.

Appendages near the apex of the petiole.....*S. peruviana*.

Appendages at or below the middle of the petiole.

S. amazonica.

Siolmatra amazonica Cogn. Pflanzenreich IV. 275, pt. 1: 30. 1916.

Distinguishable from *S. peruviana* chiefly by the lower position of the petiole auricles, wider distribution of the pubescence, the stems and leaf nerves being puberulent and, according to Harms, with 5 sepals, these glabrate, instead of the usual 3.—*Tessmann 3180* with pubescent inflorescence was determined by Harms as "aff." Illustrated, op. cit. 31. Neg. 8960.

Loreto: Mouth of Río Santiago, *Tessmann 4305, 4273* (both det. Harms). On Río Ucayali, *Tessmann 3180*. Leticia, in forest, *Williams 3036*. Puerto Arturo, 200 meters, edge of forest, *Williams 5187*.—San Martín: Juanjuí, 400–800 meters, in clearing, *Klug 4187*; flowers whitish green; also *No. 3781*, 400 meters; flowers yellow-green. Brazil. "Tabilla."

Siolmatra brasiliensis (Cogn.) Baill. Bull. Soc. Linn. Paris 1: 458. 1885; 29. *Alsomitra brasiliensis* Cogn. in Mart. Fl. Bras. 6, pt. 4: 115. 1878.

Glabrous or nearly so or, in var. *pubescens* Griseb., the leaves rather densely puberulent beneath; petioles stout, to 10 cm. long, the petiolule of the middle leaflet to 1.5 cm. long, those of the lateral ones 5–6 mm. long; leaflets oblong-ovate, acuminate, to 12 cm. long, 5–7 cm. wide; staminate panicle lax, the peduncle to 20 cm. long, the pedicels 1–4 mm. long; sepals triangular, acute, to 3 mm. long or equaling the slightly bilobed petals; ovary 5–6 mm. long, the style to 1.5 mm. long.—In some parts of its range known as "sacha guasca," and used for fastening roof stringers or beams.

Loreto: Caballo-cocha, in forest, *Williams 2453*. Florida, 200 meters, in forest, *Klug 2033*; a vine with white flowers. Mouth of Río Santiago, *Tessmann 4527* (det. Harms).—Río Acre: Seringal San Francisco, *Ule 9379* (det. Cogn.). Argentina; Brazil; Paraguay.

Siolmatra Mexiae Standl., sp. nov.

Herbacea scandens, caulibus gracilibus striatis densiuscule puberulis vel breviter pilosulis vel glabratibus; folia magna papyracea longipetiolata simplicia, petiolo 5–11 cm. longo eglanduloso gracili pilosulo vel fere glabro; lamina late rotundato-ovata 16–20 cm. longa 14–16.5 cm. lata abrupte breviter acuminata vel interdum fere cuspidato-acuminata, basi profunde (ad 4 cm.) cordata, sinu aperto lato vel angusto, rare in foliis minoribus basi subcordata, lobis posticis late rotundatis, fere integra sed utroque latere dentibus glandulosis 2–3 instructa, supra in sicco viridis vel fuscescens opaca. dense pallido-puncticulata, glabra vel sparse minute pilosula, nervis venisque prominulis, subtus concolor sparse praesertim ad nervos

pilosula vel fere glabra, basi 5-nervia, nervis venisque prominulis laxè reticulatis; flores masculi parvi rubescentes vel brunnescentes racemosi, racemis paniculam longam angustam interdum spiciformem pedunculatam usque 30 cm. longam efformantibus dense multifloris, pedicellis inaequalibus usque 6 mm. longis dense viscido-pilosulis vel puberulis, alabastris globosis; calyx ca. 1.5 mm. longus fere ad basin lobatus, lobis ovalibus apice obtusis vel rotundatis extus dense puberulis; corolla 2–2.5 mm. longa subrotata vel late campanulata extus glabra, lobis apice late rotundatis; stamina 5.

Loreto: Above Rancho Indiana, on overflowed bank, left bank of Río Marañón, Distrito de Iquitos, 110 meters, January, 1932, *Ynes Mexia 6406* (type in Herb. Field Mus.). Río Putumayo, on the Colombian border, in forest, *Klug 1652*.—San Martín: Pongo de Cainarachi, 230 meters, in forest, *Klug 2749*.

Close to *S. simplicifolia* Harms, which has much broader panicles and large glands on the petioles.

Siolmatra pentaphylla Harms, Notizbl. Bot. Gart. Berlin 9: 989. 1926.

Glabrous, with 5-foliolate leaves on petioles 6–7 cm. long, these thickened at the tip but lacking glands; leaflets nearly equal, mostly oblongish, narrowed to the short petiolule, acuminate or caudate, entire, papery, to 10 cm. long, 3.5–5 cm. wide; staminate panicle ample, much branched, the rachis 10–80 cm. long; flowers about 3 mm. broad; sepals 2 (or 3?), 2 mm. long, the bilobed or erose petals a third longer; stamens 5, short.—Differs from *S. pedatifolia* Cogn., Pflanzenreich IV. 275, pt. 1: 30, by the lack of petiole appendages or glands and by the entire leaflets on shorter (3–5 mm. long) petiolules, this Cogniaux species of the Amazon region having appendaged petioles, and crenate leaflets on petiolules 8–12 mm. long. A liana 20 meters long with light green flowers, the petals darker at the base (Tessmann). Neg. 8963.

Loreto: Mouth of Río Santiago in flood-free, high woods, *Tessmann 4575*, type.

Siolmatra peruviana (Huber) Cogn. Pflanzenreich IV. 275, pt. 1: 30. 1916. *Alsomitra peruviana* Huber, Bol. Mus. Goeldi 4: 616. 1906.

A vine with slender but deeply sulcate, glabrous stems, trifoliolate, glabrous leaves, and ample, yellowish-puberulent panicles; petioles 3 cm. long, auricled below the apex, the petiolule of the middle leaflet 7 mm., of the lateral leaflets 5 mm. long; leaflets thin,

somewhat crenate above the middle, densely reticulate-veined, the middle one ovate or elliptic, the lateral ones obliquely ovate; pedicels 1 mm. long; calyx tomentulose, the segments triangular, scarious-margined.—*S. pedatifolia* Cogn. of the Amazon region has 5-foliate leaves, the petioles apically auricled with bilobed glands.

Loreto: Canchahuayo, on Río Ucayali (*Huber 1390*, type; photo. in Herb. Field Mus.).

Siolmatra simplicifolia Harms, Notizbl. Bot. Gart. Berlin 11: 769. 1933.

Stems glabrous or nearly so, striately sulcate; petioles 4–5 cm. long, bearing inflexed auricles at about the middle or a little below the apex; leaves simple, ovate, cuneately narrowed to the margined petiole, apically mucronate or abruptly short-acuminate, sometimes slightly trilobed basally and laterally, 5-nerved, glabrous and somewhat lustrous above, rather densely short-pubescent on the nerves beneath or glabrate, 12–13 cm. long, 9.5–11 cm. broad; panicle ample, much branched, minutely puberulent; pedicels capillary, short; sepals and petals 5, the former broadly ovate, the latter slightly longer and rounded; corolla when spread 3 mm. wide or more; stamen connective very shortly apiculate.—Similar in flowers to *S. amazonica* Cogn. with trifoliate leaves, a species also with 5 instead of the usual 3 sepals.

Loreto: Yurimaguas, Puerto Arturo, *Williams 5072*, type. Florida, 180 meters, in forest, *Klug 2198*. Balsapuerto, 220 meters, in old clearing, *Klug 2896*; flowers white.—San Martín: Pongo de Cainarachi, 230 meters, in forest, *Klug 2678, 2755*.—Without locality, *Ruiz & Pavón(?)*, as "*Strychnos auriculata*." "Marucha-o" (Huitoto name, fide Klug).

3. SICYDIUM Schlecht.

Reference: Cogniaux, Pflanzenreich IV. 275, pt. 1: 256–259. 1916.

Herbaceous, dioecious vines, all the flowers paniced, rotate, with 5 sepals and 5 corolla lobes. Stamens 3, free, the filaments often very short, 2 anthers 2-celled, straight. Staminodia of the pistillate flowers often antheriferous. Ovary 1-celled; styles 3. Ovule 1, pendulous, the globose, fleshy fruit indehiscent.

Leaves mostly narrower than 5 cm.; corolla lobes ovate-triangular.
S. gracile.

Leaves mostly broader; corolla lobes narrower.

Leaves more or less densely pubescent; filaments very short.
S. tamnifolium.

Leaves glabrous; filaments longer than the anthers. *S. diffusum*.

Sicydium diffusum Cogn. in Mart. Fl. Bras. 6, pt. 4: 112. 1878; 259.

Apparently glabrous except for the pubescent pedicels and sepals, the branching stems and petioles sulcate, the latter 2–3 cm. long; leaves cordate-ovate, the basal lobes divergent, the rounded sinus to 1.5 cm. deep, 1.5–2 cm. wide, pedately 5-nerved, 6–9 cm. long, 4–6 cm. wide, shortly acuminate; staminate panicle diffuse, the branches widely divaricate, sometimes with small leaves, 20–30 cm. long; sepals subulate, 1 mm. long; corolla lobes lanceolate, to 2 mm. long; filaments 1–1.5 mm. long; anthers (2-celled) 0.3 mm. long.—Neg. 27164. The leaves are most minutely puberulent on both sides, the trichomes scarcely discernible.

Rio Acre: Seringal San Francisco and Seringal Auristella, *Ule* 9874, 9874b.—Loreto: Mishuyacu, 100 meters, in forest, *Klug* 1105; flowers yellow-green. San Ramón, 200 meters, in forest, *Williams* 4558. Florida, 200 meters, in forest, *Klug* 1984.—San Martín: Chazuta, 260 meters, in forest, *Klug* 4000; flowers cream and green. Brazil. "Habilla."

Sicydium gracile Cogn. in Mart. Fl. Bras. 6, pt. 4: 113. *pl.* 36. 1878; 257.

Filiform tendrils and very slender branches glabrous; petioles pubescent, to 2 cm. long; leaves ovate, acute, pedately 5-nerved, the basal lobes approximate, the rounded sinus 1–1.5 cm. deep, 5–7 mm. broad, more or less scabrous especially above, 6–8 cm. long, 3.5–5 cm. wide; staminate panicles dense, leafless or the leaves small, 3–7 cm. long, the numerous branches and filiform pedicels pubescent, the pedicels 2 mm. long; sepals triangular-lanceolate, the corolla lobes twice to thrice longer, 1–1.5 mm. long; anthers a third longer than the filaments, these about 0.2 mm. long.—The plant simulates *Dioscorea*. Neg. 9022.

Loreto: Mishuyacu, flowers bright yellow, *Klug* 960 (det. Harms, "aff."). Mouth of Rio Santiago, *Tessmann* 4264 (det. Harms). Brazil.

Sicydium tamnifolium (HBK.) Cogn. in DC. Monogr. Phan. 8: 905. 1881; 257. *Fevillea tamnifolia* HBK. Nov. Gen. & Sp. 7: 175. *pl.* 640. 1825.

A slender liana, well marked by its soft pubescence, this nearly tomentose on the leaves beneath; petioles to 5 cm. long; leaves rarely angulate-lobed, pedately 5-7-nerved, about 10 cm. long, 5-8 cm. wide, the basal sinus subrectangular, usually about 1 cm. broad and nearly twice as deep; panicle branches divaricate; corolla and sepals villous, the former greenish white; anthers subsessile; fruit black, pilose, about 5 mm. thick.—Var. *grandifolium* Cogn. of Bolivia has leaves half again larger, the staminate inflorescence to 30 cm. long. Illustrated, *Pflanzenreich*, IV. 275, pt. 1: 258. Neg. 9023.

Loreto: Soledad, *Tessmann 5159* (det. Harms).—Río Acre: *Ule 9871* (det. Cogniaux). Bolivia to West Indies, Mexico, and Venezuela.

4. PTEROPEPON Cogn.

Herbaceous, glabrous or glabrate vines with subdeltoid, entire or 3-cornered or rarely somewhat lobed leaves, the staminate flowers paniculate. Anthers sessile or subsessile. Pistillate flowers geminate. Fruit large, strongly flattened, fibrous, winged, the solitary seed pendulous.

Pteropepon deltoideus Cogn. *Pflanzenreich* IV. 275, pt. 1: 260. 1916. *Fevillea deltoidea* Cogn. in *Mart. Fl. Bras.* 6, pt. 4: 119. 1878; 260.

Leaves thin, broadly subdeltoid, or the Peruvian plant with some 3-lobed leaves, the outer lobes also slightly lobed, typically 8-13 cm. long, 9-15 cm. wide, always broader than long, about equaled by the panicles of glabrous flowers, their lobes ovate; anthers connate in a ring; fruit not costate, about 7 cm. long and nearly as broad.—On the basis of the presence of some lobed leaves, Harms questions his determination in the absence of fruit. The other known species, *P. monospermus* (Vell.) Cogn., of southern Brazil, has leaves longer than broad, a papillose corolla with narrowly lanceolate lobes, and costate fruits. The Peruvian plant, on geographic grounds, may in any case conveniently be named: *P. deltoideus* var. *peruvianus* Harms, var. nov. *Foliis integris, subtrilobatis vel trilobatis, lobis lateralibus plus minusve lobatis.* Illustrated, *Pflanzenreich*, IV. 275, pt. 1: 261 (the typical form).

San Martín: Alto Río Huallaga, *Williams 6639* (type of the var., *Herb. Field Mus.*; det. Harms). Brazil.

5. PSEUDOSICYDIUM Harms

A simple-leaved vine with ample panicles of minute, dioecious flowers. Calyx cupulate-patelliform, 4 of the sepals deltoid, 1 lanceo-

late. Petals 5, subequal. Filaments connate, the 3 anthers borne horizontally at the top of the short column, forming an equilateral triangle.—With the aspect of *Sicydium*, but with the stamen structure of *Cyclantheropsis* Harms of Africa. That genus has only 2 anthers. The only species known is the following.

Pseudosicydium acariaeanthum Harms, Notizbl. Bot. Gart. Berlin 10: 183. 1927.

Glabrous or essentially so except the minutely puberulent, sulcate-striate stems and panicles; petioles 4–5 cm. long; leaf blades ovate or oblong-ovate, slightly cordate or rounded at the base, short-cuspidate at the apex, papery, minutely white-puncticulate, 3–5-nerved from the base, 10–12 cm. long, 4–5 cm. wide; panicle greatly elongate, the rachis at least 20–30 cm. long, with some reduced, oblong leaves at the base; pedicels 1.5–2.5 mm. long; flowers green, to 3 mm. broad. Neg. 9020.

Loreto: Marshy woods, Yarina-cocha, 155 meters, *Tessmann* 5417, type.

6. SICYOS L.

Reference: Cogniaux in DC. Monogr. Phan. 3: 869–899. 1881.

Thin-leaved, annual vines with monoecious flowers, the staminate racemose or subcorymbose, the pistillate often borne with them, clustered at the top of the peduncle or rarely solitary. Sepals and petals exceptionally 4. Filaments connate, the 3 (2–5) anthers sessile at its summit and connate or free, more or less flexuous to nearly straight. Staminodia none.—Otherwise similar to *Sicydium*.

Key based largely on foliage

Leaves 3-lobed, the middle lobe caudate-acuminate; sepals 4.

S. urolobus.

Leaves, if somewhat lobed, not caudate-tipped; sepals 5.

Leaf sinus definitely V-shaped; fruits about 1.5 cm. long.

S. acariaeanthus.

Leaf sinus not at all or not strikingly V-shaped; fruits rarely 1 cm. long.

Leaf sinus more or less angled or rounded; fruits smooth or more or less setose.

Petioles to 1 cm. long; fruits smooth or villous.

Leaf sinus narrow; flowers few; fruits glabrous. . . *S. laevis*.

Leaf sinus open; flowers usually many; fruits villous at first. *S. gracillimus*.

Petioles much longer; fruits more or less setose.

Sepals minute or small.

Staminate racemes simple.

Tendrils simple.....*S. trigeminus*.

Tendrils trifid.

Leaves villous, becoming merely scabrous; staminate racemes and petioles subequal.....*S. Baderoa*.

Leaves short-hirsutulous beneath; staminate racemes about as long as the leaves.....*S. Kunthii*.

Staminate racemes compound.....*S. montanus*.

Sepals 4-5 mm. long.....*S. Weberbaueri*.

Leaf sinus definitely truncate on either side of the petiole; fruits conspicuously setose.

Leaves angled or shortly 3-5-lobed, sparsely puberulent or glabrous.....*S. chaetocephalus*.

Leaves somewhat 5-7-lobed, densely puberulent, finally scabrous.....*S. malvifolius*.

Key based largely on fruits

Fruits smooth, glabrous or tuberculate, not setulose.

Fruits glabrous.....*S. laevis*.

Fruits tuberculate or more or less villous.....*S. Baderoa*.

Fruits more or less setose, or rarely some of them smooth in age.

Setae numerous, the head of fruits thus prickly-setose.

Fruits acute, 8-10 mm. long.....*S. chaetocephalus*.

Fruits obtuse, 6 mm. long.....*S. malvifolius*.

Setae few or scattered.

Fruits with numerous setae (6-15); leaves densely pubescent.

S. Kunthii.

Fruits with usually only 2-8 setae; leaves puberulent beneath or becoming merely scabrous or glabrate.

Sepals 4-4.5 mm. long.....*S. Weberbaueri*.

Sepals minute.

Leaves with a V-shaped basal sinus; fruits 1.5 cm. long.

S. acaridaeanthus.

Leaves cordate; fruits to 1 cm. long or rarely longer.

Leaves 3-lobed, the middle lobe long-caudate *S. urolobus*.

Leaves, if at all lobed, not caudate-tipped.

Staminate racemes short, about as long as the petioles.

S. Baderoa.

Staminate racemes elongate, often about as long as the leaves.

Staminate racemes compound *S. montanus*.

Staminate racemes simple *S. trigeminus*.

Sicyos acarlaeanthus Harms, Repert. Sp. Nov. 19: 172. 1923.

Glabrous or nearly so except the subsetulose petioles 0.5–3 cm. long, the puberulent leaves, especially beneath, and the sparsely puberulent fruits; leaves suborbicular, V-cordate at the base, angulately 3–5-lobed or shortly 3-lobed, denticulate or subentire, 3–8 cm. broad; tendrils trifid; staminate peduncles many-flowered above, 2–7 cm. long, the capillary pedicels 4–7 mm. long; flowers white, 1.5 mm. broad, the sepals setaceous, the deltoid or lanceovate petals lightly papillose within; anther cells suberect; pistillate peduncle 2–4 cm. long, bearing apically 2–3 (or 1) flowers; fruit rostrate, to 1.5 cm. long, with 4–8 or more setae.—The name refers to the presence of perfect flowers; in this character as well as in its more numerous pistillate flowers and setae on the fruit the species differs from *S. fusiformis* Cogn., of southern Brazil. Neg. 9056.

Piura: In evergreen bush below Frías, Prov. Ayavaca, 1,800 meters, *Weberbauer 6420*, type.

Sicyos Baderoa Hook. & Arn. in Hook. Bot. Misc. 3: 324. 1833; 884. *S. bryoniaefolius* Moris, Mem. Accad. Torino 37: 106. *pl.* 6. 1834.

Sparsely villous-hirsute, including the corolla, the angulate stems glabrous except at the nodes; petioles 2–10 cm. long; leaf blades deeply cordate, angled or slightly 3–5-lobed, entire or minutely denticulate, finally merely scabrous beneath, mostly 5–10 cm. long and broad or larger; tendrils trifid; staminate racemes 3–5 cm. long, the 3–8 flowers capitately crowded, on pedicels 1–3 mm. long; calyx tube to 3 mm. broad; corolla lobes papillose and with a few long hairs, about 2 mm. broad; pistillate peduncles filiform, usually less than 1 cm. long, fruit ovoid, acute, sparsely villous and aculeate, becoming glabrous and tuberculate, 6 mm. long.—Harms has given publication of the name of Moris as by Cogniaux, *op. cit.*, but it was mentioned by Moris in a seed list in 1831 and effectively published by him in 1834. Apparently his name, virtually a her-

barium name of Bertero, is antedated by that of Hooker and Arnott, op. cit., not 234 as given by Cogniaux. The flowers are greenish white (Weberbauer). The seeds are employed as a popular purgative in native medicine, and the plants are burned for the ash used as fertilizer in agriculture (Herrera).

Lima: Chicla, 3,720 meters, *Weberbauer* 257; 169 (det. Cogniaux); *Ball.* Near Lima, *Wawra* 2539; *Isern* 2517. Río Blanco, 3,000–3,500 meters, *Killip & Smith* 21592. Callao, *Gaudichaud*; (*Gay*).—Cajamarca: Casas, *Raimondi* (det. Harms).—Ancash: *Raimondi* (det. Harms).—Arequipa: Posco and Cachendo (*Guenther & Buchtien* 61, 61a; det. Bruns). Atequipa, *Raimondi* (det. Harms).—Moquehua: Torata, *Weberbauer* 7392. Carumas, *Weberbauer* 7350.—Cuzco: *Herrera* 217 (det. Harms). Chile; Ecuador. "Barredera."

Sicyos chaetocephalus Harms, Repert. Sp. Nov. 19: 172. 1923.

Sulcate-striate stems and elongate petioles more or less long-pilose, the latter to 6 cm. long or longer; leaves broadly cordate, shortly 3–5-lobed or angulately lobed, obscurely denticulate, sparsely puberulent or subglabrous, 9–15 cm. broad; tendrils 3–5-parted; staminate peduncles 5–9 cm. long, short-pilose or puberulent, many-flowered, the slender pedicels puberulent, 9–13 mm. long; flowers 6–7 mm. broad, greenish, both receptacle and corolla puberulent, the deltoid lobes of the latter to 2.5 mm. long; pistillate peduncle in each axil with the staminate, to 1.5 cm. long, the somewhat setulose flowers densely capitate, the fruiting head (with setae) 3–4 cm. thick; fruits sessile, acute, short-setulose, 8–10 mm. long.—Separated by the author from *S. longisetosus* Cogn. op. cit. 882, from Guayaquil, with shortly and densely villous leaves and 60–80-flowered pistillate heads that in fruit become 4–6 cm. thick, the setae 12–16 mm. long.

Piura: Between Chulucanas and Morropón, 150 meters, in algarrobo hedge, *Weberbauer* 5971, type.

Sicyos gracillimus Cogn. in DC. Monogr. Phan. 3: 886. 1881.

A delicate vine with nearly glabrous, entire, slightly angled leaves; petioles 4–8 mm. long, more or less villous like the simple staminate racemes, these filiform, 5–7 cm. long, to about 25-flowered, the spreading pedicels 1–2 mm. long; calyx glabrous, 2–2.5 mm. broad; corolla greenish or white (Weberbauer), sparsely glandular, to 1.5 mm. broad; stamen column slender, the anthers capitate; pistillate peduncle 1 cm. long; fruit at first villous, becoming glabrate, subacute, 4 mm. long, 2.5 mm. thick.—The leaves may be obscurely

denticulate, sparsely hispidulous beneath, and rarely as large as 5 cm. wide and long. Neg. 31068.

Lima: Mt. Amancaes, on stony ground, *Weberbauer 1590* (det. Cogniaux); 143; 145; *Wawra 2640*, type. Hills of Lima, *Isern 2514*. Chancai, *Ruiz & Pavón*. San Gerónimo, 150 meters, 5916; flowers white. Matucana, 2,400 meters, along stream, 395.—Huánuco: Cochero, *Ruiz & Pavón*.

Sicyos Kunthii Cogn. in DC. Monogr. Phan. 3: 888. 1881. *S. parviflorus* HBK. Nov. Gen. & Sp. 2: 119. 1817, non Willd.

More or less pubescent or villous, especially the sulcate stems at the nodes; petioles to about 10 cm. long; leaves broadly ovate, acute or acuminate, the rather narrow sinus of the cordate base 1–2 cm. deep, the blade as long as the petiole, sometimes broader than long, sparsely hirsute-puberulent above, densely so or villous beneath; tendrils 2–3-parted; staminate peduncles 10–25 cm. long, 20–30-flowered, the subverticillate, spreading, filiform pedicels 7–12 mm. long; calyx tube villous only within, to 3 mm. broad; corolla to 2 mm. broad, the lobes sparsely papillose; pistillate peduncle in fruit to 4 cm. long; fruit black-spotted, acute, 8 mm. long, half as broad, long-villous with as many as 15 rigid setae 3–4 mm. long.—Flowers yellowish green. *S. subcorymbosus* Cogn. of Bolivia, similar, has greenish, subcorymbose flowers, leaves glabrous above but white-punctate, tendrils 3–4-fid, and fruit either bearing 3–6 rigid setae near the base or smooth. The type of *S. Kunthii*, from Chillo near Quito, has been credited by Cogniaux to Peru.

Lima: Near Lima (*Nation 180*). Ecuador.

Sicyos laevis Gray, Bot. U. S. Expl. Exp. 1: 648. 1854.

Glabrous except the young leaves, these short-villous on both sides, ovate, deeply cordate, cuspidate-acuminate, angulately dentate or slightly 5-lobed, denticulate, in age sparsely rugulose and short-papillose, 5–6 cm. long; tendrils trifid; petioles 5–7 mm. long; pistillate peduncle scarcely equaling the leaves, the few flowers 4 mm. broad, with filiform stamen column; pistillate peduncle 4–5 mm. long; fruit acute, 5–7 mm. long (immature).—*S. subcorymbosus* might be sought here; cf. under *S. Kunthii*.

Lima: Obrajillo (*Wilkes Exped.*, type).

Sicyos malvifolius Griseb. Abh. Ges. Wiss. Goett. 19: 147. 1874; 24: 136. 1879.

In many respects similar to *S. chaetocephalus*; leaves slightly 5–7-lobed, at first shortly and densely villous on both sides, finally

scabrous; staminate peduncles 10–18 cm. long, the pedicels glandular-puberulent, 3–8 mm. long; calyx and corolla sparsely long-pilose; fruits rugulose-tuberculate, 6 mm. long, the fragile setae 2–3 mm. long. Neg. 9061.

Peru: Without locality (*Gay*).—Huánuco: Ambo, 2,100 meters, 3151. Bolivia; Argentina.

Sicyos montanus Poepp. & Endl. Nov. Gen. & Sp. 2: 53. *pl.* 172. 1838; 889.

Stems prostrate or climbing over shrubs, villous-puberulent like the elongate petioles, 3–4-fid tendrils, leaves above, and peduncles; leaves broadly ovate, deeply cordate at the base with a narrow sinus to 3 cm. deep, short-acuminate, 5-angled or shallowly lobed, nearly tomentulose-pubescent beneath, minutely and remotely denticulate, 10–15 cm. broad and long; staminate peduncles to 20 cm. long, usually with 3–4 divaricate branches; pedicels filiform, about 1 cm. long; calyx narrowly campanulate, the tube glabrous or sparsely pilose, 2.5 mm. long, 2 mm. broad; fruit shortly tomentose, with 4–5 rigid setae.—Similar to *S. Kunthii*, which has a broadly campanulate calyx, the staminate racemes usually simple. Here might be sought *S. palmatilobus* Cogn. of Guayaquil; it has deeply 5-lobed leaves and pistillate flowers geminate on an elongate peduncle, the fruit to 2 cm. long, asperous with appressed setae. Also *S. aculeatus* Fries, Ark. Bot. 6, No. 11: 5. *pl.* 2. 1907, of Bolivia, with calyx 1 mm. long, 3 mm. wide, and fruit with 6–9 rigid bristles. Neg. 9062.

Huánuco: Chinchao, *Poeppig 1698*, type.

Sicyos trigeminus Rusby, Mem. Torrey Club 3, No. 3: 38. 1893.

Much like *S. Kunthii*, but with simple tendrils, shorter, hispidulous petioles, narrowly acuminate leaves with a broad, rounded sinus, minutely hispid beneath, sparsely so with longer trichomes above; flowers in distinct whorls of 3; fruits 3-capitate, when young villous with a few yellowish prickles from obscure tubercles, abruptly acuminate, 4 mm. long or longer.—“Very near *S. subcorymbosus*” (Cogn. in herb. Dahlem); cf. note under *S. Kunthii*. Name written by its author “*trigemina*.”

Piura: Right valley of Río Quiroz, Prov. Ayavaca, 1,200 meters, *Weberbauer 6385* (det. Harms). Bolivia.

Sicyos urolobus Harms, Notizbl. Bot. Gart. Berlin 11: 775. 1933.

Scandent, the tendrils 3–4-parted; stems and leaves above more or less pilose; petioles villous-hirsute, 4–6 cm. long; leaf blades

ovate to suborbicular, obviously cordate, 3-lobed above the middle, the lateral lobes strongly oblique and curved, often with a basal lobule, the middle lobe caudate, with an acumen 2-3 cm. long, mucronulate-denticulate, densely or velvety puberulent beneath, 8-15 cm. long; staminate peduncle 5-12 cm. long, becoming densely hirsutulous toward the hirsute, often fasciculate pedicels, these 10-17 mm. long; flowers greenish, sparsely puberulent, all the parts in 4's; sepals finely filiform, 2-2.5 mm. long; corolla papillose within, with a spread of 5-6 mm.; pistillate peduncle 3-5 cm. long; fruits bearing 2-4 setae.—The author compares this species, to which the younger leaves by their exceptional points give a unique appearance, to several others, notably *S. Kunthii* Cogn. and *S. montanus* P. & E., both with different leaves; also to *S. subcorymbosus* Cogn. and *S. aculeatus* Fries, Ark. Bot. 6, No. 11: 5, both of Bolivia and both, too, with different leaves, the latter in addition with branched instead of simple racemes. Apparently also allied and possibly occurring in Peru is *S. Andreanus* Cogn., with punctate, asperous leaves 5-lobed nearly to the base, the lance-linear lobes long-acuminate; fruits with several short, reflexed, uncinat prickles.

Ayacucho: Choimacota Valley, 2,600 meters, open places in woods, *Weberbauer* 7564, type.—Huánuco: Huacachi, 1,950 meters, 4190; flowers green.

Sicyos Weberbaueri Harms, Repert. Sp. Nov. 19: 173. 1923.

Stems, peduncles, and petioles more or less pilose, the last sometimes 12 cm. long; leaves deeply cordate, very shortly 3-5-angulate-lobed, 7-13 cm. broad or larger, sparsely and minutely puberulent above, densely so beneath; tendrils 4(-5?)-parted; staminate peduncles 10 cm. long or longer, the many slender pedicels 10-12 mm. long or the apical ones greatly reduced; receptacle glabrous, nearly 4-5 mm. broad; sepals lanceolate, acute, the margins sparsely hirsute-fimbriate, 4-4.5 mm. long, slightly exceeding the broader corolla lobes; pistillate peduncles 1-3.5 cm. long, the capitate subsessile flowers many; ovary glabrous, the young fruit showing 4-6 setae 4-6 mm. long.—Allied to *S. longisepalus* Cogn. of Guatemala, with 5-lobed leaves. Neg. 9065.

Lambayeque: Above Olmos, in river brush, 500 meters, *Weberbauer* 7094, type.

7. ANGURIA L.

Gurania (Schlecht.) Cogn. Bull. Soc. Bot. Belg. 14: 239. 1875.
Guraniopsis Cogn. Bot. Jahrb. 42: 173. 1908.

Reference: Cogniaux, Pflanzenreich IV. 275, pt. 1: 178-230. 1916.

Lianas or herbaceous, perennial vines with simple or bifid tendrils, entire, lobed, or 3-5-foliolate leaves, and small or conspicuous flowers, these usually dioecious, the staminate variously borne, most often racemosely, toward the summit of a long peduncle. Calyx tube elongate, green, half green, or colored, the sepals, as in other genera, developed to greater or less degree. Corolla about rotate, the more or less spreading and broad petals longer than the sepals (Sect. *Euanguria* Schlecht.) or rarely subequal, or erect or suberect, relatively narrow, and much shorter than the sepals (Sect. *Gurania* Schlecht.). Stamens 2, sessile, dorsifixed, free or coherent. Anther cells straight, curved or replicate below, the connective often produced. Pistillate flowers solitary or few. Staminodia none or 2. Ovules many, horizontal.—See also the segregate *Dieudonnaea*. To avoid awkwardness in making new combinations in incidental references, some species are listed as *G.* (*Gurania*).

It seems obvious that the division of *Anguria* into three genera is arbitrary. Recently described species show further the relative development of the characters. It is interesting to note the variation in anther cells within this natural genus, a variation accepted by Cogniaux himself. For simplicity the receptacle has been termed here the calyx tube, following many writers. Generally colored in the section *Gurania*, at least one species therein has the calyx tube green in the lower half.

Leaves trifoliolate; rarely 5-foliolate (in *A. bignoniacea* exceptionally unifoliolate).

Petals distinctly longer than the sepals.

Leaflets cuneate at the base; petals 1.5-2 cm. long.

A. bignoniacea.

Leaflets more or less rounded at the base; petals 3-4.5 cm. long.

A. grandiflora.

Petals shorter than the sepals or only 1-2 mm. longer.

Calyx viscid-pilose.....*A. Tessmannii*.

Calyx glabrous or lightly pubescent, at least not viscid-pilose.

Sepals spreading, 2-2.5 mm. long; leaves glabrous; anther appendage filiform, papillose.....*A. Balfoureana*.

Sepals erect, often 3-4 mm. long; anther appendage not filiform.

Leaflets lightly pubescent, at least beneath; anther appendage faintly to densely papillose.

Leaflets long-pilose on the upper surface. *G. Smithii*.

Leaflets glabrous or short-villous on the upper surface.

Anthers 5 mm. long, the appendage scarcely papillose;
sepals 3-4 mm. long. *A. ucayalina*.

Anthers 4 mm. long, the appendage papillose; sepals
2.5-3 mm. long. *A. cissoides*.

Leaflets glabrous, as also the anther appendage; sepals
2 mm. long. *A. inaequalis*.

Leaves more or less lobed, sometimes deeply, or entire.

A. Sepals narrow, 6-28 mm. long.

Leaves entire or repand-lobed (cf. also *A. Guentherii*).

Leaves caudate-acuminate; petioles 3-6 cm. long.

A. pyrocephala.

Leaves short-acuminate; petioles 1-2 cm. long. . . *A. speciosa*.

Leaves more or less deeply lobed, at least some of them.

Leaves all 5-7-lobed; plant abundantly lanate. . . *A. lanata*.

Leaves more or less deeply 3(-5)-lobed.

Sepals 14-27 mm. long.

Leaves 3-lobed, the lateral lobes often spreading; sepals
not densely long-pilose.

Sepals 17-27 mm. long; petioles 1-2.5 cm. long.

A. pycnocephala.

Sepals 14-17 mm. long; petioles 5-9 cm. long.

Calyx tube 12-13 mm. long. *A. insolita*.

Calyx tube about 5 mm. long. *A. pachypoda*.

Leaves 3-5-lobed, the lateral lobes often not spreading;
sepals densely long-pilose. *A. eriantha*.

Sepals 6-10 (-13) mm. long.

Sepals much longer than or subequaling the pedicels
and petals.

Stems densely reddish-pilose; anthers straight, 4 mm.
long, 1 mm. wide, the connective narrow.

A. rufipila.

Stems not densely pilose; anthers replicate (unless in
A. pachypoda?), longer.

Calyx tube narrow, about cylindric, subequaling or
longer than the sepals.

Calyx tube to 2 cm. long; anthers 12 mm. long.

A. spinulosa.

Calyx tube to 1 cm. long; anthers 5-6 mm. long.

A. Weberbaueri.

Calyx tube subglobose or ovoid, exceeded by the often ligulate sepals.

Inflorescence sessile or nearly so . . . *G. apodantha.*

Inflorescence long-pedunculate.

Pedicels 3-4 mm. long, thickish; calyx tube puberulent *A. pachypoda.*

Pedicels 3-10 mm. long, slender; calyx tube villous *A. Ulei.*

Sepals much shorter than the pedicels, subequaling the petals.

Sepals subulate *A. longipedicellata.*

Sepals linear-oblong *G. Killipii.*

A. Sepals 2-4 (-5) mm. long.

Leaves not at all or very indistinctly cordate.

Leaves pubescent on both sides *A. Mathewsii.*

Leaves glabrous or essentially so.

Sepals 2-3 mm. long *A. Boissieriana.*

Sepals 4-5 mm. long *A. Guentherii.*

Leaves distinctly cordate.

Sepals 3 mm. long; pedicels obsolete *A. capitata.*

Sepals 5 mm. long; pedicels well developed . . . *A. pachypoda.*

***Gurania apodantha* Standley, sp. nov.**

Herbacea scandens, caule gracili sulcato subsparse breviter piloso, internodiis elongatis; folia breviuscule petiolata coriaceo-membranacea, petiolo crasso ca. 4 cm. longo; lamina 13-15 cm. longa et aequilata profunde triloba, basi subcordata et brevissime decurrens, supra ad nervos dense breviter hispidulo-pilosa, aliter glabra vel glabrata et dense albido-papillosa, subtus fere concolor sparse breviter patenti-pilosa, basi trinervia, venis subtus prominulis laxo reticulatis; inflorescentia mascula (1 tantum visa) sessilis, densa, floribus numerosissimis breviter racemosis, pedicellis gracilibus sed in statu sicco non conspicuis ad 14 mm. longis pilis longis gracillimis villosis; calyx ca. 15 mm. longus extus subdense pilis longissimis albidis patentibus vestitus, tubo hemispherico 8 mm. lato et ultra,

lobis fere 1 cm. longis lanceolato-linearibus apicem angustum versus sensim attenuatis.

Loreto: Iquitos, 100 meters, in forest, August, 1929, *Killip & Smith 27451* (type in U. S. Nat. Herb.; photo. in Herb. Field Mus.).

Calyx bright orange. Easily recognizable by the sessile inflorescence, providing this is not abnormal in the type material. This species, like two others described here as new, I have preferred to leave in the genus *Gurania*, rather than refer them to *Anguria*.

Anguria Balfourea (Cogn.) Macbr., comb. nov. *Gurania Balfourea* Cogn. in DC. Monogr. Phan. 3: 714. 1881; 227.

Slender-stemmed, the puberulent petioles of the trifoliolate leaves 2 cm. long, the petiolules of the oblong-lanceolate, acuminate leaflets 5–10 mm. long; leaflets glabrous, remotely spinulose-denticulate, subequal, auricled at the attenuate base, 3–4 cm. wide, 8–10 cm. long; tendrils short, glabrous; staminate peduncle pilose, 12–15 cm. long, the puberulent, crowded pedicels 3–6 mm. long; calyx tube oblong, sparsely puberulent, 7–8 mm. long, 3–4 mm. broad, the spreading, triangular sepals 2–2.5 mm. long; petals oblong, obtuse, 3–4 mm. long, papillose like the filiform appendages of the basally replicate anthers, these 6 mm. long.—*A. pallida* Cogn. might be sought here; see under *A. inaequalis*.

Peru: Without locality (*Mathews 2043*, type).

Anguria bignoniacea Poepp. & Endl. Nov. Gen. & Sp. 2: 53. 1838; 184. *A. triphylla* Miq. Linnaea 19: 136. 1847.

Glabrous, dioecious, the leaves all or most of them trifoliolate or very rarely all unifoliolate; spikes eventually many-flowered, the elongating rachis conspicuously scarred by the fallen calyces, the scars as much as 2 mm. wide; petioles to 2.5 cm. long, the petiolules about 1 cm. long; leaflets oblong-lanceolate, attenuate at the base, short-acuminate, at least 10 cm. long, 4–6 cm. long, 4–6 cm. wide; calyces rarely pedicellate, 10-striate, 8–10 mm. long, 2–3 mm. wide, the spreading, ovate sepals 2 mm. long, the broadly obovate, reddish petals 1.5–2 cm. long; anthers straight, with slightly papillose appendages; pistillate flowers solitary, the peduncle 1–2 cm. long or twice as long in fruit; fruit ovoid, 3–4 cm. long, 2–2.5 cm. thick.—In the type the nodes and the calyces are somewhat pulverulent; there are many pustules on the leaves. Var. ***pallida*** (Cogn.) Macbr., comb. nov. (*A. triphylla* Miq. var. *pallida* Cogn. in DC. Monogr. Phan. 3: 670. 1881, *Mathews 2041*, without locality in Peru), differs from the type in having the leaves pale on both sides; there is

another variety in Ecuador with long-acuminate leaves. Neg. 31062. Illustrated, Mart. Fl. Bras. 6, pt. 4: *pl.* 10.

Huánuco: Cochero, *Poeppig* 1703, type.—Junín: La Merced, 600 meters, on trees along river, 5383. Chanchamayo, *Isern* 2366. —Loreto: Iquitos, *Tessmann* 5066 (det. Harms). Soledad, *Tessmann* 5246 (det. Harms). Mishuyacu, 100 meters, in forest, *Klug* 542; flowers red.—San Martín: San Roque, 1,400 meters, in forest, *Williams* 6946, 7370.—Río Acre: Cobija, *Ule* 9870 (det. Cogniaux; leaves partly unifoliolate). Seringal Auristella, *Ule* 108b (leaflets all unifoliolate). Bolivia; Venezuela; Guianas. "Ampato huasca," "sacha-vaca-quina."

Anguria Boissieriana Cogn. in DC. Monogr. Phan. 3: 673. 1881; 187.

Glabrous except the puberulent petioles (2 cm. long), peduncles (25 cm. long), and sepals, these suberect, sparsely pilose, 2 mm. long; leaves deeply 3-lobed, scarcely if at all cordate at the base, entire or nearly so, to 12 cm. long and 15 cm. broad, the lobes divaricate, triangular, acute; tendrils slender; flowers sessile, crowded, the calyx tube subrotund at the base, 7-8 mm. long, 2-3 mm. thick; petals obovate, densely papillose on both surfaces, 4-5 mm. long; anthers straight, about 5 mm. long, the narrow appendage scarcely papillose.

Peru: Masova, *Ruiz & Pavón*, type.

Anguria capitata Poepp. & Endl. Nov. Gen. & Sp. 2: 52. 1838; 225. *Gurania capitata* Cogn. Diag. Cucurb. 1: 18. 1876.

Very near *A. Guentheri*, differing principally in the subsessile flowers, the thick pedicels only 0.5-1 mm. long, and in the oblongish calyx tube, this 7-9 mm. long, 3-4 mm. broad, the sepals 3 mm. long; petals only 2 mm. long.—Var. *pallida* (Cogn.) Macbr., comb. nov. (*G. capitata* var. *pallida* Cogn. in DC. Monogr. Phan. 3: 711. 1881), has subentire leaves, ashy-colored beneath. The leaf lobes of the typical form are abruptly caudate. *A. magdalenae* Pittier, 182, found as near as Ecuador, has deeply cordate leaves, the lateral lobes auricled, and sepals only 1 mm. long. *A. umbrosa* HBK., 190, ranging from Brazil to Surinam and Mexico, might key here but has deeply 5-7-lobed leaves. Neg. 8990, the var.; Neg. 31061, the type.

Huánuco: Pampayacu, *Poeppig* 1222, type.—Without locality, *Ruiz & Pavón*.—Junín: Chanchamayo, *Raimondi* (det. Harms); *Isern* 2104. La Merced, 700 meters, *Killip & Smith* 23714; flowers

bright orange-red; on brush along river, 5382. Schunke Hacienda above San Ramón, 1,300–1,700 meters, *Schunke* A12. Chanchamayo Valley, 1,200 meters, *Schunke* 359.

Anguria cissoides Benth. in Hook. Journ. Bot. 2: 242. 1850; 228. *Gurania cissoides* Cogn. Diag. Cucurb. 1: 16. 1876.

High climbing, the green parts more or less villous, finally glabrous or essentially so except the lightly pubescent pedicels, these apically congested, 6–16 mm. long, the common peduncle (staminate) to 25 cm. long; petioles 2–3 cm. long, at first densely villous, becoming glabrate; leaflets 3, on petiolules 5–15 mm. long, acute or short-acuminate, papillose or sparsely pubescent above, sparsely and obscurely hispid beneath on the nerves, the terminal one attenuate at the base, 9–18 cm. long, 4–7 cm. wide, the slightly smaller lateral ones broadened and auriculate at the outer edges; pedicels 6–16 mm. long; calyx tube strigose-puberulent, the hairs subappressed, ovoid-oblong, rounded at the base, 5–6 mm. long, 2–3 mm. thick; sepals erect, to 3 mm. long; petals linear, papillose, 1.5–2 mm. long; anthers replicate basally, 4 mm. long, the narrow, villous connective with a papillose appendage 1 mm. long.—*A. parviflora* Cogn., 190, of Ecuador has 5-foliolate leaves, subulate sepals 1.5 mm. long, and narrowly ovate petals to 2.5 mm. long. *G. variabilis* Cogn., 217, of Bolivia is nearly *A. inaequalis* (Cogn.) Macbr., but the sparsely pilose, long-acuminate leaflets are subsessile. *G. brachyodonta* Donn. Sm., 227, of Ecuador has spreading sepals as in the related *A. Balfourea* (Cogn.) Macbr., from which it differs by its glabrous peduncles shorter than the leaves.

Huánuco: Pampayacu, *Poeppig* 1703, in part. Brazil and Guianas.

Anguria eriantha Poepp. & Endl. Nov. Gen. & Sp. 2: 52. pl. 169. 1838; 200. *Gurania eriantha* Cogn. Diag. Cucurb. 1: 16. 1876.

Stems, petioles, leaf nerves, and calyces conspicuously pubescent with spreading, white-lustrous, setose-pilose trichomes, the longer hairs 5–7 mm. long; petioles 2–4 cm. long; leaf blades thin, suborbicular, 8–15 cm. long and broad, entire or usually more or less 3-lobed, deeply cordate at the base; staminate flowers capitate-spicate, the sparsely hirsute peduncles to 60 cm. long; calyx tube rounded at the base, 6–8 mm. long, 4 mm. thick, the flexuous, suberect sepals subulate and twice as long; petals densely papillose on both surfaces, about 1 cm. long; anthers straight, 2.5–3 mm. long, the connective broad, muticous.—*G. Andreana* Cogn., 201, similar, of Ecuador, has

sepals 5-6 times longer than tube. Illustrated, *Pflanzenreich* IV. 275, pt. 1: 201, scarcely typical. Neg. 8993.

Junín: Huacapistana, 1,600 meters, *Weberbauer* 2330; 252. Chanchamayo Valley, 1,200 meters, *Schunke* 1733.—Cuzco: Valle de Lares, *Herrera* 1803 (det. Harms). Marcapata Valley, 1,750 meters, *Weberbauer* 7847; calyx fiery red, corolla yellow. Santa Ana, 1,250 meters, *Herrera* 961.—Loreto: Yurimaguas, *Poeppig*, type. Leticia, in forest, *Williams* 3164. Iquitos, 120 meters, *Williams* 8037. Florida, 180 meters, riverside forest, *Klug* 2267; flowers red.—San Martín: San Roque, 1,400 meters, in forest, *Williams* 7097. Juanjuí, 400-800 meters, in clearing, *Klug* 4340. "Usiya-o" (Huitoto name).

Anguria grandiflora Cogn. Diag. Cucurb. 1: 22. 1876; 183. .

Closely allied to *A. bignoniacea*, but the lateral leaflets each with a very pronounced bulge on the outer edge; petioles to 5 cm. long; leaflets 5-10 cm. wide; calyx tube 10-15 mm. long, the sepals 4-6 mm. long; petals 3-4.5 cm. long, 12-20 mm. wide.—Both Tessmann collections were determined by Harms as "aff."; in this material the petals are only 8 mm. wide, extending 1-1.5 cm. beyond the calyx, this 1 cm. long. Illustrated, as *A. gloriosa* S. Moore, Trans. Linn. Soc. II. Bot. 4: pl. 25. Neg. 31065.

San Martín: Tarapoto, *Ule* 6550; *Williams* 6514.—Loreto: Yurimaguas, *Poeppig* 2415, type. Yarina-cocha, *Tessmann* 3379. San Isidro, *Tessmann* 4791. Manfina, *Williams* 1167. Mishuyacu, 100 meters, in forest, *Klug* 105; flowers red. Bolivia; Paraguay. "Mashu-huario."

Anguria Guentheri (Harms) Macbr., comb. nov. *Gurania Guentheri* Harms, Notizbl. Bot. Gart. Berlin 9: 990. 1926.

Glabrous or essentially so except for the short (always?) inflorescences, these densely appressed-villous with brown hairs; leaves entire or 3-lobed, the former oblong-ovate, rounded at the base, acuminate, the latter lobed at least to the middle, the acuminate lobes ovate or oblong, all 3-nerved from the base, chartaceous or papery, remotely and minutely denticulate, 12-17 cm. long, 7-14 cm. wide; lateral peduncles geminate, 0.5-2 cm. long, the many flowers apically sub-umbellate on pedicels about 5 mm. long; calyx broadly urceolate, 3-3.5 mm. broad; sepals somewhat spreading, narrowly ovate, glabrous within or nearly so, 4-5 mm. long; petals 2.5 mm. long; anthers 2, flexuous, basally replicate, the connective appendage short, acute, glabrous or nearly so.—Differs from *A. capitata* Poepp. & Endl. in

its peduncled inflorescences and larger calyces; although only short lateral racemes are present in the material cited, Harms suggests that the species, like many others, may develop also long-peduncled racemes. He refers with some doubt to the last two numbers cited, this being pistillate material. A slender liana with red or fiery red calyx, the petals orange (Tessmann). In flooded or flood-free woods. Neg. 8994.

Loreto: Mouth of Río Santiago, *Tessmann 4113*, type; *4538*. Mouth of Río Apaga, *Tessmann 3845*. Pongo de Manseriche, in forest, 150 meters, *Killip & Smith 29139*; corolla red.

Anguria inaequalis (Cogn.) Macbr., comb. nov. *Gurania inaequalis* Cogn. Diag. Cucurb. 1: 32. 1876; 217.

Stems slender, sulcate, with a few long, white hairs; petioles pubescent, 4–25 cm. long; leaves trifoliolate, the lateral petiolules 1.5 cm. long, the middle one 2–2.5 cm. long; leaflets obtuse or short-acuminate, minutely denticulate, glabrous, the middle one acute at the base, about 20 cm. long and half as wide, the lateral ones strongly asymmetric and semicordate, 8–11 cm. wide; flowers 40–50, capitate-racemose, glabrous or nearly so, the slender peduncle 20 cm. long or longer, the pedicels 3–5 mm. long; calyx tube red, oblong, slightly attenuate at the base, 4–5 mm. long, slightly pubescent; sepals erect, triangular-lanceolate, 2 mm. long, the slightly papillose, yellow petals 1–1.5 mm. long; anthers replicate at the base, 3–3.5 mm. long, the connective extremely narrow, the appendage glabrous. —*A. pallida* Cogn., 182, of Ecuador, has leaflets scarcely asymmetric and fewer spicate flowers with a greenish calyx tube 10 mm. long. Neg. 8998.

Loreto: Leticia, *Ule 6185*.—Huánuco: Posuso, 600 meters, on sunny brush, *4627* (det. Harms). Brazil.

Anguria insolita (Cogn.) Macbr., comb. nov. *Gurania insolita* Cogn. Pflanzenreich IV. 275, pt. 1: 209. 1916.

Shortly villous-puberulent nearly throughout; stems and petioles stout, the latter 5–6 cm. long; leaf blades 15–18 cm. long, 16–20 cm. wide, deeply 3-lobed, the lobes abruptly acuminate, entire or nearly so, the lateral lobes with a spreading basal lobe or point, the resulting sinus as much as 4 cm. broad; flowers numerous, horizontally spreading in head-like racemes on peduncles 10 cm. long and 7–8 mm. thick above; pedicels 2–3 mm. long; calyx tube rather long-villous, 12–13 mm. long, 4 mm. broad, the red, scarcely flexuous, linear-acuminate sepals glabrous within, sparsely pilose without,

15–17 mm. long, the finely papillose, nearly linear petals a third as long; anthers straight, 9 mm. long, the appendage smooth.—Illustrated, op. cit. 210.

Río Acre: Seringal San Francisco, *Ule* 9878, type.

Gurania Killipii Standley, sp. nov.

Scandens herbacea, caule crassiusculo striato subdense puberulo et sparsius villosulo-hirsuto, internodiis elongatis; folia majuscula petiolata coriaceo-membranacea, petiolo crasso ca. 4.5 cm. longo densissime pilis sordidis villosulo-hirsuto; lamina ca. 18 cm. longa atque aequilata fere ad basin 5-loba, basi cordata et breviter decurrens, supra subdense hispidula tactu aspera, subtus ubique hispidula et papillosa, lobis irregulariter sinuatis et repando-dentatis, oblongis vel elliptico-oblongis acutis; inflorescentia mascula umbellata laxa multiflora, pedunculo crasso ca. 23 cm. longo villosulo-puberulo; pedicelli graciles 1.5–3.5 cm. longi minute puberuli inaequales; calyx extus minute scaberulo-puberulus, tubo angusto 1.5 cm. longo 3–5 mm. crasso, sepalis lineari-oblongis 8–10 mm. longis acutis suberectis, petalis anguste oblongis fere aequilongis; antherae replicatae lineares, connectivo angusto, appendice parvo glabro.

Loreto: Santa Rosa, lower Río Huallaga, below Yurimaguas, 135 meters, in forest, September, 1929, *Killip & Smith* 28907 (type in U. S. Nat. Herb.; photo. in Herb. Field Mus.).

Anguria lanata (Cogn.) Macbr., comb. nov. *Gurania lanata* Cogn. Diag. Cucurb. 1: 26. 1876; 199.

Stems hirsute, the hairs long; petioles to 5 cm. long, densely long-lanate-villous; leaf blades membranous, sparsely pilose above, densely tomentose-lanate beneath, 10–20 cm. long and nearly as wide, 5–7-parted, the lanceolate, acuminate lobes minutely and remotely spinulose-denticulate, the basal sinus 1–2 cm. broad, 2–3 cm. deep; staminate flowers red, densely spicate-capitate, the lanate peduncles 20–30 cm. long; calyx tube narrowly ovoid, rounded at the base, densely white-lanate, 6–8 mm. long, 4 mm. thick, the erect, nearly straight, subulate, lanate sepals 16–18 mm. long; petals linear, densely villous, especially at the base, 6–8 mm. long; anthers cordiform, replicate below, with a broad, muticous connective; pistillate flowers many, racemose, the pedicels 1–3 cm. long; calyx tube 16–18 mm. long; sepals 10–12 mm. long, equaled by the petals.

San Martín: Tarapoto, *Spruce* 4297.—Loreto: Uanano, Lower Río Napo, *Tessmann* 3708 (det. Harms ex descr.). San Isidro,

Tessmann 4956 (det. Harms ex descr.).—Without locality: (*Gay 791*; *Mathews 1226*).

Anguria longipedicellata (Cogn.) Macbr., comb. nov. *Guraniopsis longipedicellata* Cogn. Bot. Jahrb. 42: 174. 1908; 192.

Glabrous or nearly so except for the leaves beneath and the loose racemes of conspicuously long-pediceled flowers; petioles 3–4 cm. long; leaf blades 12–20 cm. long and broad, with 3–5 repand-dentate, acute lobes, slightly scabrous above, villous-puberulent beneath; flowers monoecious, both staminate and pistillate peduncles 8–10 cm. long, the filiform pedicels 3–8 cm. long; calyx tube villous-puberulent, 1.5–2 cm. long, 2 mm. broad, the erect, subulate sepals 8–10 mm. long, the broadly obovate, puberulent petals 7 mm. long; anthers 5 mm. long, straight, with a narrow connective, scarcely produced.—An anomalous plant, with the green calyx and thin, broad, spreading petals constricted at the base, as in *Anguria*, sens. strict., but petals pale yellow and exceeded by the sepals as in Sect. *Gurania*, which caused Cogniaux to create for it an intermediate genus. As in *A. pachypoda* (Harms) Macbr., the sepals may much exceed or only equal the petals; both *Guraniopsis* and *Gurania* can be maintained as genera only on the character of the petals. Illustrated, *Pflanzenreich* IV. 275, pt. 1: 193. Neg. 8973.

Junín: In rocks at edge of thicket near Huacapistana, 1,800 meters, *Weberbauer 1969*, type; 247.

Anguria Mathewsii Macbr., nom. nov. *Gurania parviflora* Cogn. Diag. Cucurb. 1: 38. 1876; 224; non *A. parviflora* Cogn.

More or less villous-hirsute throughout except the pilose calyces and papillose petals, the thin, undivided leaf blades narrowly ovate, scarcely at all cordate, acuminate, remotely spinulose-denticulate, about 15 cm. long and half as wide; petioles 2–3 cm. long; staminate flowers 10–15, capitately subcorymbose, the sparsely pilose peduncle 12–15 cm. long, the puberulent pedicels 5–7 mm. long; calyx tube sordid-red, narrowly ovoid, rounded at the base, 4–5 mm. long, half as broad, the sepals erect, ovate, 2–3 mm. long, the narrowly ovate petals glabrous within, 1.5–2 mm. long; anthers basally replicate, 4 mm. long, the narrow appendage apically papillose.—*G. neogranaensis* Cogn., 221, of Colombia and Bolivia, may well occur and would be sought here; it has deeply 3-lobed leaves, tomentose calyces with spreading sepals 4–5 mm. long, and pubescent anther connective. *G. Eggersii* Sprague & Hutchinson, 206, Ecuadorian, is peculiar in its 5-parted leaves, densely papillose petals, and straight anthers.

Peru: Without locality (*Mathews 1218*, type).

Anguria pachypoda (Harms) Macbr., comb. nov. *Gurania pachypoda* Harms, Notizbl. Bot. Gart. Berlin 9: 991. 1926.

Glabrous except for the puberulent calyces, and well marked by the large, medially 3-lobed leaves and head-like racemes with the thick pedicels persisting; petioles 7-9 cm. long; leaf blades broadly cordate at the base but the blade more or less narrowed to the petiole, the oblongish lobes with an acumen 2-3 cm. long, remotely spinulose-denticulate or subentire, to 30 cm. broad and about as long, 3-nerved from the base, the reticulation prominent beneath; axillary peduncle to nearly 30 cm. long; pedicels congested, puberulent, 3-4 mm. long; calyx tube globose-campanulate, 5 mm. long, 4-5 mm. thick; sepals glabrous, lax, linear-lanceolate, 12-15 or sometimes only 5-7 mm. long, the shorter petals papillose; anthers basally replicate, the appendage elongate-conical.—Not placed by the author. Calyx fiery red, yellow within; a liana 3 meters long (*Tessmann*). *A. Wageneriana* Schlecht., 215, found as near as Ecuador, has rounded or acute leaf lobes. Neg. 9004.

Loreto: Flood-free forest, San Antonio, middle Marañón, *Tessmann* 4934. *Krukoff* 6969 of Brazil, distributed as *G. Ulei*, may belong here. Brazil.

Anguria pycnocephala (Harms) Macbr., comb. nov. *Gurania pycnocephala* Harms, Notizbl. Bot. Gart. Berlin 10: 182. 1927.

Stems deeply sulcate, more or less lanuginous-villous as also the petioles, these 1-2.5 cm. long; leaf blades suborbicular, 3-lobed to below the middle, cordate with a broad sinus, remotely denticulate, thin, sparsely pilose or glabrate above, the lobes more or less obovate, oblong, or ovate, acuminate, the middle one 7-11 cm. long; peduncle villous or glabrate, to 20 cm. long; flowers capitate-congested; pedicels pilose, mostly shorter than 6 mm.; calyx narrowly urceolate, loosely pilose or villous, 13-16 mm. long; sepals unequal, linear-lanceolate, acuminate, 17-27 mm. long; petals short-lanceolate, 4-5 mm. long; anther connective short, appendaged.—Near *G. longiflora* Cogn., 211, with subentire leaves (Harms). Sepals fiery red; petals orange (*Tessmann*). Neg. 9006.

Loreto: Yarina-cocha, 155 meters, in upland forest, *Tessmann* 5401, type. Santa Rosa, 135 meters, in forest, *Killip & Smith* 28726; corolla orange-red, anthers yellow. Between Yurimaguas and Balsapuerto, 140 meters, in forest, *Killip & Smith* 28137; sepals red, corolla yellow.—Junín: Puerto Bermúdez, 375 meters, in forest, *Killip & Smith* 26663; corolla bright orange, anthers yellow.

Anguria pyrrhocephala (Harms) Macbr., comb. nov. *Gurania pyrrhocephala* Harms, Notizbl. Bot. Gart. Berlin 9: 991. 1926.

Rather similar to *A. speciosa* but the pubescence of the stems very dense and longer, the trichomes 4-7 mm. long, brownish; petioles 3-6 cm. long or longer; leaves more or less deeply cordate, almost setaceous-caudate; calyx campanulate-subglobose, with only a few hairs or almost none, nearly 7 mm. long, 5-6 mm. broad; sepals 2 cm. long or longer, filiform-acuminate; petals 10-12 mm. long, papillose-villous; anthers retroruplicate at the base.—By the character of the anthers allied to *A. villosa* (Cogn.) Macbr., comb. nov. (*G. villosa* Cogn. Diag. Cucurb. 1: 25. 1876) and *A. crinita* (Huber) Macbr., comb. nov. (*G. crinita* Huber, Bull. Soc. Bot. Genève, II. 6: 212. 1914), both of the Amazonian region, the former with calyx tube only 2 mm. long and broad, the latter with orange-pubescent calyces and petals only 6 mm. long, the sepals 2-3 mm. long. The Ecuadorean *G. phanerosiphon* Sprague & Hutch., 202, has a villous calyx and petals united below. Creeping on the floor of flood-free forest; calyx green below, the sepals fiery red with whitish pubescence, the petals yellow (*Tessmann*). Neg. 9007.

Loreto: Mouth of Río Santiago, 160 meters, upland forest, *Tessmann* 4658. Above Iquitos, *Tessmann* 5215. Santa Rosa, 135 meters, in forest, *Killip & Smith* 28749; corolla bright orange, anthers yellow. Mishuyacu, 100 meters, in forest, *Klug* 1106; flowers red, yellow within.

Anguria rufipila (Cogn.) Macbr., comb. nov. *Gurania rufipila* Cogn. Diag. Cucurb. 1: 30. 1876; 212.

Distinct from other species similar in appearance by the rusty instead of white or translucent pilosity, this especially dense on the stems, petioles, peduncles, and leaf nerves beneath; petioles 6-8 cm. long; leaf blades nearly 3-parted, the long-acuminate, oblongish lobes conspicuously repand-dentate, the middle one 17-22 cm. long, at the middle 9-13 cm. wide, the lateral ones smaller; staminate flowers fiery red, terminally congested on stout peduncles 15 cm. long or longer; pedicels 1-3 mm. long; sepals erect, subulate, 10-13 mm. long; petals ovate-lanceolate, villous, 3 mm. long; anthers straight, 4 mm. long, the extremely narrow connective with a smooth appendage.—*G. boliviana* Rusby, 220, is more or less rusty-tomentose, with orange-yellow, umbellate flowers on pedicels 1 cm. long. Neg. 9008.

Loreto: Leticia, *Ule* 6208. La Victoria, in forest, *Williams* 2543; edge of forest, *Williams* 2905. Brazil.

Gurania Smithii Standley, sp. nov.

Herbacea scandens, caulibus gracillimis pilis longis laxis albidis patentibus dense villosopilosis, internodiis elongatis; folia inter minora petiolata membranacea, petiolo 2–3 cm. longo dense longivilloso; foliola 3.6–9 mm. longe petiolulata elliptica vel oblongo-elliptica inaequalia, apice abrupte breviter cuspidata, basi obtusa vel subrotundata et saepe valde obliqua, remote obscure repandodenticulata vel fere integra, utrinque pilis longissimis laxis albidis sparse villosa, in statu juvenili dense villosa; flores masculi brevissime racemosi, racemis umbelliformibus paucifloris ca. 1.5 cm. latis, pedicellis dense villosis vix 2 mm. longis; calyx extus dense laxepilis longis villosus, tubo hemispherico-tubuloso 4 mm. longo basi rotundato, sepalis inaequalibus ovato-lanceolatis 3–4.5 mm. longis attenuato-acutis; petala triangulari-subulata sepalis plus quam duplo breviora; antherae ovales, connectivo lato, appendice parvo glabro.

Junín: Pichis Trail, Eneñas, 1,600–1,900 meters, in forest, in 1929, *Killip & Smith 25773* (type in U. S. Nat. Herb.; photo. in Herb. Field Mus.).

Calyx orange-red.

Anguria speciosa Poepp. & Endl. Nov. Gen. & Sp. 2: 51. *pl.* 169. 1838; 202. *Gurania speciosa* Cogn. Diag. Cucurb. 1: 16. 1876.

Similar in pubescence to *A. eriantha* and nearly similar in other respects, but the leaves undivided or merely repand-lobed, the peduncles sometimes only 20 cm. long, or 40 cm. long; petals much shorter, to 5 mm. long; anthers to 4 mm. long.—*G. tubulosa* Cogn., 215, Ecuadorean, is glabrate, the yellow petals connivent into a tube.

Huánuco: Casapí and Cochero, *Poeppig 1664*, type.—Junín: Chanchamayo Valley, 1,000 meters, *Weberbauer 2340*; 283; *Schunke 360*.—Loreto: Puerto Limón, *Tessmann 3853* (det. Harms).—Río Acre: Seringal Auristella, *Ule 9873*.

Anguria spinulosa Poepp. & Endl. Nov. Gen. & Sp. 2: 52. *pl.* 170. 1838; 216. *Gurania spinulosa* Cogn. Diag. Cucurb. 1: 17. 1876.

A long, stout vine, ligneous below, with deeply sulcate stems; petioles tomentulose, 6–15 cm. long; leaf blades scabrous or glabrate above, puberulent-pilose beneath, 15–40 cm. long and broad, medially 3-lobed, the lobes acute, remotely spinulose-dentate, the basal sinus 4–8 cm. deep; staminate flowers many, congested, the shortly villous-tomentulose peduncles to several dm. long; pedicels 1–3 cm.

long; calyx yellowish, subrotund at the base, densely strigose-puberulent, about 2 cm. long, the linear, erect sepals (6-) 10-13 mm. long; petals yellow, tomentulose, 6-7 mm. long; anthers basally replicate, 12-13 mm. long, with a narrow connective and a linear, glabrous appendage; pistillate flowers fasciculate, the fruiting peduncles 2-8 cm. long; fruit oblong, 6-7 cm. long, 15-18 mm. thick.—Var. *glabrata* Cogn. is glabrate, the leaves sparsely and minutely pilose on both sides. Neg. 9011.

Ayacucho: Above Aina, 1,800 meters, *Weberbauer* 5606, the var.—Río Acre: *Ule* 9872, 9910.—Huánuco: Huánuco (?), *Poeppig*. Cochoero, *Poeppig* 1393. Vilcabamba, 1,800 meters, 4998.—Without locality: *Ruiz & Pavón* 26-2.—Cuzco: Valle de Lares, *Herrera* 1806 (det. Harms). Below Pillahuata, 2,000-2,300 meters, along trail in forest, *Pennell* 14071; flowers salmon-orange.—San Martín: Zepelacio, 1,200-1,600 meters, in forest, *Klug* 3548; flowers yellow.—Junín: Chanchamayo Valley, 1,500 meters, *Schunke* 566, 565, 480. Above San Ramón, 1,400-1,700 meters, edge of forest, *Killip & Smith* 24716; corolla orange-red, anthers pale yellow. Cahuapanas, 340 meters, in forest, *Killip & Smith* 26765. Puerto Yessup, 400 meters, *Killip & Smith* 26324. La Merced, 1,200 meters, on sunny shrubs, 5606.—Loreto: Uanana on the lower Río Napo, *Tessmann* 3706 (det. Harms). Lower Río Nanay, *Williams* 291A, 293. Iquitos, 100 meters, edge of forest, *Williams* 1376, 1423, 1436, 7902. San Antonio, 145 meters, in forest, *Williams* 3422. Puerto Arturo, 200 meters, in forest, *Williams* 5087, 5127. Fundo Indiana, 110 meters, in forest, *Mexia* 6400; a vine 6 meters long. Santa Rosa, 200 meters, *Williams* 4944. La Victoria, edge of forest, *Williams* 2796, 2883. Bolivia and Brazil to northern South America.

Anguria Tessmannii (Harms) Macbr., comb. nov. *Gurania Tessmannii* Harms, Notizbl. Bot. Gart. Berlin 9: 992. 1926.

Very similar to *A. ucayalina*, but the pedicels only 3-4 mm. long and the calyces densely viscid-pilose, the lobes sparsely hirsute; anthers 4 mm. long, the appendage slightly papillose.—Nearly *A. cissoides* Benth., with sparsely pubescent calyx, and *A. inaequalis* (Cogn.) Macbr., with sepals only half as long (2 mm.). As Harms hints, it seems doubtful that these plants actually represent different species. Blossoms fiery red; petals orange (Tessmann). Neg. 9015.

Loreto: Parinari on the lower Marañón, *Tessmann* 5028, type.—Ayacucho: Near Kimpitiriki, 400 meters, in forest, *Killip & Smith* 23008; corolla orange-red. Estrella, 500 meters, in forest, *Killip & Smith* 23058; corolla bright orange, anthers yellow.

Anguria ucayalina (Harms) Macbr., comb. nov. *Gurania ucayalina* Harms, Notizbl. Bot. Gart. Berlin 9: 993. 1926.

Nearly glabrous or sparsely and laxly pilose, especially the leaves beneath; petioles 2-3 cm. long; leaf blades trifoliolate, the petiolules about 1 cm. long, the leaflets oblong-lanceolate, narrowed at both ends, the lateral ones strongly oblique, mostly about 10 cm. long, 3-4 cm. wide; peduncle 10-17 cm. long, glabrous or essentially so, like the densely aggregate flowers, the pedicels 5-10 mm. long or longer; calyx tube subcylindric-urceolate, 5-6 mm. long, 3 mm. broad; sepals glabrous, 3.5-4 mm. long, the petals 2-2.5 mm. long; anthers replicate at the base, to 5 mm. long, the narrowly acute appendages scarcely papillose.—Like *A. inaequalis*, with sepals 2 mm. long and calyx tube pubescent instead of glabrate or a trifle puberulent, and *A. cissoides*, also more pubescent, especially the calyx. The species seems to me to be very doubtful. Calyx fiery red; petals yellow (Tessmann). Neg. 9016.

Loreto: Cashiboplaya on the middle Río Ucayali, *Tessmann 3512*, type.

Anguria Ulei (Cogn.) Macbr., comb. nov. *Gurania Ulei* Cogn. Pflanzenreich IV. 275, pt. 1: 205. 1916.

Entire plant very sparsely pilose and appressed-puberulent, the two sorts of pubescence intermixed, the flowers more densely pubescent; petioles 3-5 cm. long; leaf blades thin, cordate-orbicular, 12-17 cm. long and broad, deeply 3-lobed, the lobes oblong-obovate, their margins remotely denticulate; sinus broadly rectangular; staminate peduncles about 20 cm. long, the pedicels to 10 mm. long; calyx 5-6 mm. long, 4-5 mm. wide, the oblong-ligulate sepals 8-11 mm. long, far exceeding the pale, finely papillose, exserted petals; connective broad, glabrous, the papillose appendage 1 mm. long, the anthers basally replicate; pistillate flowers solitary or geminate, the peduncles 3-4 cm. long.—Compare *A. Weberbaueri* for specimens confused with this species. Neg. 9017.

Río Acre: Seringal Auristella, *Ule 9868*, type.—San Martín: Tarapoto, 360-900 meters, *Williams*.

Anguria Weberbaueri (Harms) Macbr., comb. nov. *Gurania Weberbaueri* Harms, Notizbl. Bot. Gart. Berlin 7: 502. 1921.

Rather stout and glabrous except for some minute puberulence on the leaf nerves above (or leaves sometimes pubescent) and on the racemes, the calyces sparsely puberulent-villous; petioles to 10 cm. long or longer; leaf blades 20-25 cm. wide and 25 cm. long

or larger, 3-lobed even to below the middle, often deeply cordate at the base, the lobes remotely subspinulose, denticulate, ovate or ovate-lanceolate, acuminate; staminate peduncles 10-20 cm. long, bearing as many as 10 fiery red flowers, the rusty-puberulent pedicels to 7 mm. long or about as long as the narrow calyx tube, this acute or obtusish at the base, the linear-filiform sepals nearly glabrous, much longer than the petals, 6-9 mm. long.—*Tessmann 3506* has leaves pubescent on both sides but is referred here in Herb. Berlin by Harms without question; *Tessmann 4977* is determined by Harms, "cf. *Weberbaueri*." Separated by the author from *G. pseudo-spinulosa* Cogn., 221, of Colombia and Brazil by its glabrous stems and smaller calyces, the tube not rounded at the base. The Klug specimens were distributed as *G. Ulei*, which compare.

San Martín: Zepelacio, *Klug 3449*.—Huánuco: Valley of Río Mayro, in evergreen bushwood, 1,300 meters, *Weberbauer 6754*, type.—Loreto: Yarina-cocha, *Tessmann 3506* (det. Harms). San Isidro, *Tessmann 4977*(?). Florida, Río Putumayo, in clearing, *Klug 2120*. Iquitos, 100 meters, in thickets and waste places, *Killip & Smith 27338, 26894*. "Maruchao."

8. DIEUDONNAEA Cogn.

High-climbing, villous lianas, the creeping, leafless base bearing the sessile staminate racemes of reddish, dioecious flowers. Calyx and corolla 5-parted, the tube of the former urceolate-subglobose, the segments of the latter small, scaly at the base. Stamens 2, free; anthers subpeltate, plane, ovate, 2-celled, the narrow cells flexuous, the connective dilated.—A genus of doubtful validity in view of the variation of characters in *Anguria*.

Dieudonnaea rhizantha (Poepp. & Endl.) Cogn. Bull. Soc. Bot. Belg. 14: 239. 1875; 519. *Anguria rhizantha* Poepp. & Endl. Nov. Gen. & Sp. 2: 52. pl. 171. 1838.

Vigorous, with stout, sulcate stems and petioles, the latter about 10 cm. long; leaf blades broadly ovate, sparsely long-villous, becoming scabrous on both sides, the margins ciliate and remotely spinulose-dentate, slightly cordate, more or less 3-lobed, the nerves prominent and reticulate beneath; staminate racemes elongating to 15 cm., the stout, sparsely pilose pedicels 1-3 cm. long; bracts deciduous; calyx in age lustrous, about 1 cm. long, 8 mm. broad, the lobes ovate-lanceolate, acuminate, to 20 mm. long; petals glabrous within, 4-5 mm. long; pistillate flowers apparently unknown.

—Var. *Poeppigiana* (Schlecht.) Cogn., doubtfully more than the extreme variation in leaf lobing, has leaves 3-lobed to four-fifths their length, the lobes more oblong-lanceolate than triangular, the middle one constricted at the base. Neg. 9024.

Huánuco: Tocache and Yurimaguas, *Poeppig*, type.—Loreto: Puerto Limón, *Tessmann 3868* (det. Harms). Lower Huallaga, *Tessmann 3762* (det. Harms). Lower Río Napo, *Tessmann 3728*. Mishuyacu, 100 meters, in forest, *Klug 157, 786*; flowers red.

9. APODANTHERA Arnott

Reference: Cogniaux, *Pflanzenreich* IV. 275, pt. 1: 54–67. 1916.

Perennial herbs, climbing or prostrate, with simple or bifid tendrils and monoecious or dioecious flowers, the staminate usually in racemes, the pistillate solitary or rarely glomerate. Anthers usually 3, sessile, dorsifixed, free or lightly coherent, 1-celled, the cells rarely curved, the connective little if at all produced. Three staminodia present in the pistillate flowers. Style with 3 fleshy stigmas, inserted in a disk. Fruit fleshy, indehiscent, with many horizontal seeds.—Besides the following, *A. scabra* Cogn., op. cit. 58, of Ecuador, may well be expected; it is unique in its not at all lobed leaves that are long-acuminate and much longer than broad, scabrous on both sides.

Leaves entire or slightly lobed or serrate, merely tuberculate-asperous beneath; staminate racemes 2-flowered. *A. biflora*.

Leaves more or less deeply lobed, usually somewhat hairy beneath; staminate racemes several-many-flowered.

Leaves large, broadly 3-lobed, like the calyx densely woolly-pubescent beneath. *A. eriocalyx*.

Leaves not broadly 3-lobed or the leaves and calyx not both woolly-pubescent.

Calyx glabrous or sparsely and laxly pilose. (Cf. *A. Weberbaueri* in age.)

Leaves densely pubescent beneath, the pubescence minute. *A. mucronata*.

Leaves laxly pilose beneath. *A. tumbeziana*.

Calyx densely pubescent, at least at the base, or scabrous-hirsute.

Flowers only a few mm. long; leaves ashy-pubescent. *A. cinerea*.

Flowers 1–3 cm. long; leaves usually green, at least above.

Leaves densely tomentulose beneath; calyx more or less villous.

Calyx densely viscid-villous or tomentose. *A. Mandonii*.

Calyx villous only at the base. *A. Mathewsii*.

Leaves laxly villous or scabrous beneath; calyces hirsute or scabrous-hirsute.

Calyx and mature leaves beneath shortly scabrous-pubescent. *A. Weberbaueri*.

Calyx and mature leaves beneath laxly villous-hirsute. *A. Herrerae*.

Apodanthera biflora Cogn. Diag. Cucurb. 2: 43. 1877; 63.

Marked at once by its solitary or binate staminate flowers borne on glabrous or slightly pilose peduncles about as long as the ovate-cordate leaves, these obscurely denticulate, glabrous above, white-tuberculate-asperous or scabrous beneath, entire or deeply 3-lobed, 5–10 cm. long and broad or larger; calyx villous, about 15 mm. long, 3 mm. thick, the subulate sepals nearly as long; petals yellowish, glabrous, to 3.5 cm. long; anthers more or less flexuous; fruit glabrous, smooth, 2 cm. long.—Illustrated, op. cit. 63. Neg. 27117.

Piura: Between Piura and Hacienda Ñomala, 200 meters, *Weberbauer 5944*. Negritos, *Haught F46* (det. Harms). Ecuador. "Yuca del monte."

Regarding this species Mr. Haught's notes supply the following information: A herbaceous vine from a perennial, tuberous root. The vines reach a length of about 2 meters, and have a disagreeable smell, about like that of the "stinking gourd" of the southwestern United States. Fruit striped light and dark green, about 6 cm. long and 4 cm. wide. The root is edible after cooking, and is known as "yuca del monte." Found throughout the region, but growth takes place only after the heavy rain, usually at intervals of several years.

Apodanthera cinerea Cogn. Pflanzenreich IV. 275, pt. 1: 59. 1916.

A monoecious vine, distinguishable at once from other Peruvian species by its small flowers, these campanulate, 3–4 mm. long, 8–10 borne on hirsutulous-puberulent pedicels 4–8 mm. long, the common, similarly pubescent peduncle about 10 cm. long; leaves roundish, especially beneath appressed-ashy-villous, 4–6 cm. wide and long, deeply 3–5-lobed, with a broad basal sinus; tendrils simple; sepals

2.5 mm. long; petals yellow, villous on both surfaces, 3 mm. long; fruit smooth, 2 cm. thick, half again as long, borne on a peduncle 5-8 mm. long. Neg. 8951.

Loreto: Salinas de Pilluana, Huallaga, *Ule* 6759, type.

Apodanthera eriocalyx Cogn. Bot. Jahrb. 50: Beibl. 111: 75. 1913; 57.

Closely allied to and in general resembling *A. Mandonii*, but the stems and petioles glabrous or lightly villous, the leaves often much larger, 8-16 cm. long and wide, and, especially, the calyx very long-lanate, 14 mm. long, the sepals 4 mm. long; petals yellow, obovate-angled, glabrous within, 5 mm. long; anthers lightly coherent, 6 mm. long; fruit 4 cm. long.—The leaf pubescence beneath is a somewhat tangled villosity. Neg. 8953.

Lima: Mountain north of Chosica, 1,900 meters, *Weberbauer* 5343.

Apodanthera Herrerae Harms, Notizbl. Bot. Gart. Berlin. 11: 770. 1933.

Glabrate or lightly pilose, especially the young leaves beneath, the staminate inflorescences more or less densely hirsute, especially the narrow, tubular-funnelform receptacle; petioles 2-5 cm. long; leaf blades roundish, 3-5-lobed sometimes to the middle, the lobes ovate or lanceolate, coarsely and irregularly lobulate to subentire, often mucronulate at the tip; blades at the base somewhat cordate, the middle lobe, from sinus to apex, 6-12 cm. long, the axillary racemes little longer; pedicels 0.5-2.5 cm. long; receptacle nearly 1.5 cm. long; sepals 2-3 mm. long; corolla lobes subrotund, 5-7 mm. long; anthers 4 mm. long; pistillate flowers solitary, the more or less hirsute pedicels to 4 cm. long; ovary oblongish, to 2 cm. long, hirsute-villous.—Compared by the author with *A. hirtella* Cogn. Pflanzenreich IV. 275, pt. 1: 61, of Bolivia, with much more deeply parted leaves, racemes nearly twice as long, and longer sepals.

Cuzco: Huasas near Oropesa, 3,200 meters (*Herrera*); *Herrera* 3038. "Ckotockoto."

Apodanthera Mandonii Cogn. Diag. Cucurb. 2: 41. 1877; 57.

A slender-stemmed, monoecious vine, more or less villous, especially the leaves softly so beneath or sometimes tomentose; petioles 1-2 cm. long; leaf blades nearly round, deep green and sparsely puberulent-scabrous above, 5-8 cm. long and broad, usually deeply 3-5-lobed, the lobes often lobulate, undulate, or denticulate,

the rounded basal sinus about 2 cm. deep; tendrils very unequally bifid; staminate peduncles to 12-flowered, 8 cm. long or more than twice as long, the tomentose pedicels 5–8 mm. long; calyx subacute at the base, ashy-tomentose, 10–12 mm. long, 3 mm. thick, the sepals to 2 mm. long; anthers 5 mm. long; pistillate peduncle 2–3 cm. long; pistillate calyx 6–7 mm. long, the sepals to half as long, the petals as long; fruit glabrous, 2.5 cm. long.—Var. *canescens* Cogn. has leaves densely tomentose beneath, the middle lobe longer; in var. *dissecta* Cogn. the lobes of the leaves are very narrow and more or less lacinate. Neg. 27116.

Peru: Without locality (*Gay 1815*; var. *canescens*); (*Gay 1967*; var. *dissecta*).—Moquehua: Carumas, *Weberbauer 7263, 7273a*. (var. *dissecta*).—Cuzco: Below Lares, 2,900 meters, *Weberbauer 7897*; flowers yellow (det. Harms).—Huánuco: San Rafael, *Sawada 113* (det. Harms). Ambo, 2,100 meters, canyon slopes, trailing on banks, *3146*.—Lima: Matucana, 2,400 meters, trailing on slide rock slope, *2891*; fruits green; on steep, grassy slope at base of cliff, *337*; plants 3–6 meters long. Bolivia.

Apodanthera Mathewsii Arnott ex Hook. Journ. Bot. 3: 274. 1841; Cogn. Diag. Cucurb. 2: 40. 1877; 56.

Similar to the related *A. mucronata*, but the stems villous-puberulent, the leaves slightly broader than long, only lightly 3-lobed, and the basal sinus subrectangular, 2–3 cm. wide, the tendrils densely puberulent and, especially, the staminate peduncle only 4–8 cm. long or about half as long as the leaves; calyx villous at the base, 10–12 mm. long; petals 3–4 mm. long.

HisanESCO (Mathews 932, type).

Apodanthera mucronata Cogn. Diag. Cucurb. 2: 40. 1877; 56.

A dioecious vine with lightly pubescent stems; petioles villous-tomentose, to 3 cm. long; leaf blades suborbicular, dark green and scabrous above, somewhat white-tomentose beneath, about 10 cm. long and wide, 3–5-lobed often to the middle, the basal sinus broad; tendrils sparsely pilose; staminate peduncle 8–20-flowered, 9–12 cm. long, the pedicels 1–2 cm. long; calyx short-attenuate at the base, 9–10 mm. long, 2 mm. thick; sepals to 2 mm. long; petals puberulent-villous, 3 mm. long; anthers 3–4 mm. long. Neg. 8957.

Without locality, *Ruiz & Pavón*.

Apodanthera tumbeziana Harms, Notizbl. Bot. Gart. Berlin 11: 770. 1933.

Similar to *A. mucronata*; petioles to 4 cm. long; sinus of the cordate leaves to 4 cm. deep; pubescence sparser, looser, especially on the leaves beneath; peduncles 14–16 cm. long; receptacles 3–3.5 mm. thick at the tip; ovary narrow, 16 mm. long, the glabrate receptacle 6–7 mm. long, 3 mm. broad.—Harms refers here with some doubt to my collection.

Tumbes: Mountain east of Hacienda La Choza, 800 meters, *Weberbauer 7691, 7691a*, type.—Huánuco: Muña, on sunny shrubs, flowers yellow, *3959*.

***Apodanthera Weberbaueri* Harms, Notizbl. Bot. Gart. Berlin 11: 771. 1933.**

A decumbent perennial with nearly the characters of *A. Mandonii* var. *dissecta*, but the pubescence harsh instead of tomentose, that on the leaves beneath scabrous-puberulent in age, that of the inflorescence shortly hirsute-villous or scabrous-hirsute; sepals only about 1.5 mm. long; pistillate flowers subsessile, extremely narrow.—A loma plant with golden yellow flowers.

Lima: Pativilca, Prov. Chancay, 200–300 meters, sometimes climbing on shrubs, *Weberbauer 7485*, type.

10. MELOTHRIA L.

Reference: Cogniaux, *Pflanzenreich* IV. 275, pt. 1: 75–129. 1916.

Very similar to *Apodanthera*, but the calyx always campanulate. Flowers usually monoecious. Filaments usually obvious, the anthers basifixed.

***Melothria fluminensis* Gardner, Lond. Journ. Bot. 1: 173. 1842; 85.**

A branching vine with thin, cordate, lightly angulate-lobed or entire leaves, glabrous or more or less asperous, and tiny, racemose flowers borne on a filiform peduncle 2–3 cm. long; leaves 4–5 cm. long, nearly as wide; calyx narrowly campanulate, 1.5–2 mm. long; corolla yellow, with pilose lobes; anthers orbicular; fruit 3-celled, ovoid, 9–13 mm. long, 6–9 mm. thick.—Var. *ovata* Cogn. has entire leaves, 6–12 cm. long, 4–9 cm. wide; var. *microphylla* Cogn. has leaves to 3 cm. long and peduncles to 2.5 cm. Neg. 27162.

San Martín: Tarapoto, abandoned land, *Williams 5595*. Chazuta, 260 meters, old clearing, *Klug 3989*; flowers yellow. Juanjuf, 400–800 meters, in clearing, *Klug 4329*. Tarapoto, *Ule 6465*.—Río Acre: Seringal Auristella, *Ule 9877*.—Tumbes: Mountains

southeast of La Choza, 300 meters, *Weberbauer 7727*.—Junín: La Merced, in hedgerow, 600 meters, *5263*; flowers yellow.—Loreto: Fortaleza, 200 meters, *Williams 4412*. Lower Río Nanay, *Williams 556*.—Lima: Chancay, *Ruiz & Pavón*. (*Lesson*; var. *ovata*). South America to Mexico and West Indies.

Melothria Hookeri Cogn. in DC. Monogr. Phan. 3: 588. 1881; 89.

Similar in appearance to *M. fluminensis*, but the leaves more or less asperulous-hispidulous above and especially so beneath, more or less distinctly 3-lobed, the angles of the lobes sharp, the basal sinus narrow; peduncle 4–7 cm. long; leaves sometimes 10 cm. long, 4–9 cm. wide; calyx broadly campanulate; fruit oblong-fusiform, acute, 4 cm. long, 1.5 cm. thick.

Huánuco: Cochero, *Poeppig 1408*. Pampayacu, 1,050 meters, *5111* (det. Harms). Chanchamayo Valley, 1,200 meters, *Schunke 363*. Casapí (*Mathews 2042*).—San Martín: Tarapoto, *Ule 6548*. Morales, 900 meters, *Williams 5652*. Bolivia.

11. SICANA Naud.

Closely allied to *Calycophysum*, but differing in its short campanulate calyx, not at all inflated; the staminate flowers lack the pistillodium which has been ascribed to the related genus but was not found by Pittier; cf. Contr. U. S. Nat. Herb. 20: 487. 1922.

Sicana odorifera (Vell.) Naud. Ann. Sci. Nat. IV. 18: 181. pl. 8. 1862. *Cucurbita odorifera* Vell. Fl. Flum. 10: pl. 99. 1827; ex Roem. Syn. Fasc. 2: 90. 1846. *Cucurbita euodicarpa* Hassk. Hort. Bogor. 305. 1858.

A tall, smooth, dark green vine with ample, roundish, 3-lobed, cordate leaves, the lobes acute or acuminate, undulate, denticulate; staminate peduncle, 2–4 cm. long; calyx ashy-tomentulose, the tube 6–8 mm. long, the lobes 9–12 mm. long, 5–8 mm. wide; corolla almost fleshy, tomentulose, the lobes 5-nerved without, 2 cm. long, 10–12 mm. wide; filaments glabrous, 3–5 mm. long, half as long as the extremely flexuous anthers; fruit generally cylindric or sometimes oblong-ovoid, to 50 cm. long or longer, often much shorter; seeds about 1 cm. long.—Later authorities cite the Hasskarl name "*euodicarpa*."

One of the plants growing in Peru first to be commented upon, for it was described in 1658 by Piso, who at that time found it much in favor because of its fragrant fruits that were used, as at

present, to scent linen and clothing; and Ruiz and Pavón remarked its "delightful fragrance," for which it was much used to adorn altars. It happens that it was the first plant collected by me, for it was cultivated in the patio of the well known physician and enthusiastic botanist of Lima, Dr. A. Aspiazu, whose name may well be mentioned, for he subsequently led me to many other interesting plants. A model of this specimen may be seen in the exhibits of Field Museum. It is not certain that the species is known in Peru in a native state.

Loreto: Puerto Arturo, 200 meters, *Williams 5223*. San Isidro, *Tessmann 4968, 4985*. Yarina-cocha, *Tessmann 5411*. (All det. Harms.)—Lima: Lima, cultivated, 73. San Juan del Oro (near Canta?) (*Baraquin*).—Without locality, *Ruiz & Pavón*. Brazil to West Indies. "Curua," "curuba," "secana," "upe," "padea," "olerero."

12. CALYCOPHYSUM Karst. & Triana

Lianas with monoecious, solitary flowers, the corolla nearly included in the globose-inflated calyx. Stamens 3, free; anthers fleshy, one of them 1-celled, the cells flexuous, the broader connective not produced. Ovules many, horizontal.—Harms, Notizbl. Bot. Gart. Berlin 11: 774, remarks that *Williams 5037*, Lower Río Huallaga, peduncles 2-3 cm. long, calyx 3-3.5 cm. long, is probably new, but the material is too meager for description.

Calycophysum Weberbaueri Harms, Notizbl. Bot. Gart. Berlin 11: 773. 1933.

A vine with 3-5-parted tendrils, the angulate-sulcate stems, petioles (8-10 cm. long), and leaves on the upper surface sparsely and shortly pubescent or puberulent; leaves broadly cordate-ovate or cordate-suborbicular, the deep sinus broad or narrow, apically produced into a slender point, remotely short-denticulate, sometimes obscurely trilobed, thin, densely tomentose beneath, 12-16 cm. long; staminate peduncle short-hirsutulous toward the flower, stout and 25-40 cm. long; calyx puberulent-hirsutulous, about 3 cm. long, the acuminate lobes 1-1.5 cm. long; tubular portion of the corolla almost 2.5 cm. long, the oblongish, acute lobes as long; anthers strongly flexuous.—The author suggests a relationship with *C. gracile* Cogn. of Colombia and *C. villosum* (Cogn.) Pittier of Bolivia, the former with larger flowers and 3-lobed leaves, the latter with longer pubescence and larger calyx. The type species, *C. pedunculatum* Karst. & Triana of Colombia and Ecuador, probably

extending into Peru, has 3-lobed leaves and a calyx 4–5 cm. long, its lobes broadly triangular instead of narrowly so as in the other species.

Cuzco: Lares Valley near Calca, 1,800 meters, *Weberbauer 7926*.

13. CITRULLUS Neck.

Low, spreading, musk-scented annuals with deeply twice-lobed or dissected leaves and solitary, monoecious flowers, these rotate instead of tubular-campanulate as in the preceding genus, which is similar otherwise in general characters.

Citrullus vulgaris Schrad. *Linnaea* 12: 412. 1838; 508.

Stems assurgent, branched, angled; leaves stiff, scabrous, deeply 3-lobed, the lobes pinnately parted, 10 cm. long or much larger; staminate peduncles villous, twice as long as the villous petioles, these about equaling the leaves; corolla greenish yellow, villous, about 3 cm. wide; ovary lanate; fruits about globose, the flesh sweet to very bitter.—The watermelon is the domesticated, cultivated form.

Lima: Huara, *Ruiz & Pavón*.—Loreto: Mishuyacu, 100 meters, in clearing, *Klug 861*. Adventive in warm regions from Africa. "Sandía."

14. LUFFA Adans.

Reference: Cogniaux & Harms, *Pflanzenreich* IV. 275, pt. 2: 61–75. 1924.

Scandent annuals, the leaves usually 5–7-lobed, the tendrils rarely simple, the rather large staminate flowers borne in short racemes on a long peduncle. Calyx campanulate. Petals 5, free. Stamens 3 or 5, inserted in the tube of the receptacle, the anthers exerted, their linear cells strongly flexed. Pistillate flowers solitary, with 3 (–5) staminodia. Fruit smooth or echinate, fibrous within, 3-celled, apically operculate, the many seeds horizontal.

Luffa acutangula (L.) Roxb. Hort. Beng. 70. 1814; 68. *Cucumis acutangulus* L. Sp. Pl. 1011. 1753.

Stems 5-angled, the angles scabrous like the long, stout petioles and the leaves on both sides, these harshly so, round, palmately 5–7-angled or lobed, often about 20 cm. wide; tendrils usually trifid; flowers pale yellow, pistillate and staminate in each axil, the peduncle of the latter to 15 cm. long, bearing 17–20 flowers on pedicels 1–4 cm. long; sepals lanceolate, carinate, a little longer

than the receptacle; petals 2 cm. long; stamens 3, the filaments barbed at the base, 3-4 mm. long; ovary and fruit 10-costate, the fruit 15-30 cm. long, 6-10 cm. thick, the seeds ovate, rugose.—The even more widely established and similar *L. cylindrica* (L.) Roem. may be distinguished by its 5 longer filaments and ecostate fruits, the seeds smooth and margined all around. Illustrated, Pflanzenreich IV. 275, pt. 2: 66 (habit) and 205 (fruits). Known in English as the sponge or dish-cloth gourd because of the sponge-like interior of the fruit, often used like a sponge. The young fruit serves as a vegetable and the sap, especially from the roots, is a purgative; cf. Harms, op. cit. 65 and 69, for references regarding these and other properties.

Loreto: Lower Río Pisque, *Tessmann* (det. Harms). Fortaleza, 200 meters, in pasture, *Williams* 4520. Iquitos, *Williams* 8219.—San Martín: Río Mayo, edge of forest, *Williams* 6253.—Ayacucho: Near Kimpitiriki, 400 meters, in thickets, *Killip & Smith* 22991. Native of Asia. "Taco."

Luffa operculata (L.) Cogn. in Mart. Fl. Bras. 6, pt. 4: 12. pl. 1. 1878; 70. *Momordica operculata* L. Syst. ed. 10. 1278. 1759.

Rather similar to the preceding species, but the petioles slender, the leaves less scabrous, the tendrils bifid or simple, the peduncles 5-8 cm. long, 6-10-flowered, the petals 8-10 mm. long, the filaments 2-3 mm. long, the fruits beaked, their 10 costae spinulose, the brown seeds not margined.—Illustrated, Pflanzenreich IV. 275, pt. 2: 70. Cf. Harms, 71-72, who quotes at length from Peckolt regarding medicinal properties of this plant, known in Brazil as "buchinha," "bucha," "buxa," etc., where apparently it has long had repute as a medicine for general healing and for syphilis. Raimondi noted its use in Peru for washing clothes, "but especially the head!"

Loreto: Left bank of Río Marañón, above Rancho Indiana, 110 meters, *Mexia* 6402. Middle Río Ucayali, *Tessmann* 3293 (det. Harms). Ucayali to Sarayaco and from Supe northward, *Raimondi* (det. Harms).—Piura: Talara, *Haught* 19, *F150*.—Río Acre: *Ule* 9876 (det. Cogniaux). Tropical and subtropical America. "Espon-gillo," "jaboncillo."

Regarding the plant Haught gives the following notes: A very common, annual vine, reaching a height of 10 meters at least when support is available. When the fruit is ripe, a circular piece about 8 cm. across drops off the apex, and the seeds are gradually shaken

out by the wind. The fruit is dry, spiny, about 6–8 cm. long by 3–4 cm. across.

15. MOMORDICA L.

Reference: Cogniaux & Harms, *Pflanzenreich* IV. 275, pt. 2: 8–53. 1924.

The Peruvian species are much branched vines with lobed leaves, simple tendrils, solitary, large-bracted staminate flowers, and orange-colored, tubercled or crested fruits. Corolla rotate-campanulate. Stamens 3, the short filaments free, the flexuous-celled anthers at first coherent.

Momordica Balsamina L. Sp. Pl. 1009. 1753; 28.

Similar to *M. Charantia*, but the leaves glabrous, often smaller, 4–7 cm. long and wide, deeply 3–5-lobed; peduncles 3–7 cm. long, bracted at the tip; sepals ovate, acuminate, 6 mm. long, the orange-yellow petals 15 mm. long; fruit broadly ovoid or subglobose, 3–6 cm. long.—Adventive in warm regions of the New World.

Peru: (According to Cogniaux, *Spruce* 6461). Africa.

Momordica Charantia L. Sp. Pl. 1009. 1753; 24.

Younger branches puberulent; leaves about rotund, deep green, usually somewhat pubescent on both sides, sometimes 10 cm. long and broad, pedately 5–7-lobed often nearly to the base, the lobes dentate or lobulate; staminate peduncle bracted at the middle or near the base, 5–15 cm. long; sepals ovate-lanceolate, acute, 4–6 mm. long; corolla yellow, the segments 1.5–2 cm. long; fruit oblong, 8–30 cm. long.—Illustrated, *Pflanzenreich* IV. 275, pt. 2: 31. Native of the Old World but widely distributed in all warm regions and variously employed locally, especially in medicine; cf. Harms, op. cit. 27–28. The bitter leaves, after parboiling, serve as a vegetable; the sap from the leaves or fruit may be used as a remedy for fevers, colic, worms, etc.

Junín: La Merced, 600 meters, in hedgerows on sandy flat, 5321. —Loreto: Iquitos, 120 meters, *Williams* 7957; at edge of water, *Williams* 3683. Recreo, Yurimaguas, in pasture, *Williams* 3953. Mishuyacu, in clearing, 100 meters, *Klug* 48. La Victoria, *Williams* 2655. Lower Río Nanay, *Williams* 268.—San Martín: Chazuta, 260 meters, *Klug* 4042. Generally distributed in tropical America. "Papayilla."

16. ELATERIUM Jacq.

Reference: Cogniaux in DC. *Monogr. Phan.* 3: 857–869. 1881.

Herbaceous, perennial vines with cordate leaves and small, monoecious flowers, the staminate in racemes, the pistillate solitary. Calyx tube elongate-cylindric, usually 5-parted as also the rotate corolla, this with narrow, oblong-linear or lanceolate lobes. Stamen column elongate, terminating in the oblong or globose head of connate anthers, these with linear, sigmoid-flexuous cells. Ovules erect, ascending, or horizontal. Fruit small, obliquely ovoid, gibbous, rostrate, fleshy, 1-many-celled, elastically dehiscent.—Kuntze, *Rev. Gen.* 1: 256. 1891, changed the generic name, with reason according to his viewpoint, to *Rytidostylis* Kuntze.

Peduncles and leaves subequal.....*E. carthaginense*.

Peduncles much exceeding the leaves.....*E. amazonicum*.

Elaterium amazonicum Mart. ex Cogn. *Diag. Cucurb.* 2: 55. 1877; 864.

Stems many; petioles 3–15 cm. long; leaves thin, acute, mucronate-denticulate or 3–5-lobed, 9–14 cm. long, 6–11 cm. wide, finely nerved, the sinus subrotund; staminate peduncles 5–8-flowered, slender, 15–30 cm. long; calyx tube finally glabrous, nearly linear, 1.5–2 cm. long, 3–4 mm. wide at the tip, the teeth 0.5 mm. long; petals narrow, white, spreading, 10–13 mm. long; pistillate peduncles 4–8 mm. long, to 2 cm. long in fruit; fruit somewhat hispid with thickish setae, 2 cm. long, 12–15 mm. thick.—The flowers simulate those of some Apocynaceae. Illustrated, Mart. *Fl. Bras.* 6, pt. 4: pl. 31.

Loreto: Middle Río Ucayali, *Tessmann 3289* (det. Harms, "aff."). Left bank of Río Marañón, below Rancho Indiana, 110 meters, overflowed bank, *Mexia 6460*; flowers white. Lower Río Nanay, edge of river, *Williams 462*. Iquitos, edge of river, 120 meters, *Williams 7909*. Pebas, *Williams 1859*. Brazil.

Elaterium carthaginense Jacq. *Enum. Pl. Carib.* 31. 1760; 859.

A vine, glabrous except for the angulate or more or less 3–5-lobed, very thin, acute leaves, these merely pustulate or sparsely short-villous and somewhat scabrous beneath, minutely and remotely or obscurely denticulate, 7–10 cm. long and nearly as wide; tendrils 2–3-fid; staminate peduncles to 5 cm. long, bearing about a dozen short-pedicelled, glabrous flowers 10–12 mm. long, the petals slightly longer than the cylindric calyx, this equaled by the stamens; fruiting peduncles about 1 cm. long or shorter, the long-setose fruits nearly 2.5 cm. long, 1.5 cm. thick.—Among other species known from

Ecuador or Brazil is *E. gracile* (H. & A.) Cogn. with petals much shorter than the calyx, staminate peduncles and leaves subequal. Not clearly Peruvian but in all probability occurring; the Ruiz and Pavón record, however, as shown by the specimen at Madrid, actually came from Guayaquil.

Peru: Probably. Cuba to Venezuela, Colombia, and Ecuador.

17. CYCLANTHERA Schrad.

Reference: Cogniaux in DC. Monogr. Phan. 3: 822-857. 1881.

Annual or perennial vines, similar to *Elaterium* but the calyx tube shallow or cup-like, the corolla lobes broadly ovate-oblong, the stamen column short, the anther cells conduplicate or longitudinally dehiscent or often 1 only and horizontally annulate. Fruit scarcely fleshy.—The anthers of all Peruvian species, except *C. macropoda* with anthers connate, are reduced to one, 1-celled and annulate.

Inflorescences not borne from the petiole.

Leaves 3-7-parted to the base, the leaflets sessile but narrowed below, usually toothed.....*C. pedata*.

Leaflets not parted to the base or rarely within 5 mm., the divisions not narrowing.

Leaves strongly 3-lobed, the lateral lobes widely spreading; peduncle and calyx glabrous.....*C. brachybotrys*.

Leaves (adult) 5-lobed; peduncle and calyx puberulent.

C. Siemiradzkii.

Leaves not deeply lobed or, if so, the divisions not widely spreading.

Leaves 8-15 cm. wide, shallowly 3-lobed, the lobes broadly ovate.....*C. macropoda*.

Leaves smaller, undulate-lobed, dentate, or entire or, if deeply lobed, the lobes narrow.

Leaves glabrous or essentially so, the pubescence not tomentose.

Leaves mostly more or less lobed.

Lobes of the leaves long-attenuate; fruits (including the spines) 2.5 cm. broad or larger.....*C. Killipii*.

Lobes of the leaves usually very obtuse; fruits about 1 cm. wide.....*C. Mathewsii*.

Leaves mostly subentire.....*C. microcarpa*.

Leaves densely tomentose beneath unless in a variety.

C. cordifolia.

Inflorescence borne from the apex of the petiole. . . . *C. phyllantha*.

Cyclanthera brachbotrys (Poepp. & Endl.) Cogn. Diag. Cucurb. 2: 73. 1877; 837. *Momordica brachybotrys* Poepp. & Endl. Nov. Gen. & Sp. 2: 54. 1838.

Stems glabrous except for the crisp-puberulent nodes; petioles 2-4 cm. long; leaves more or less 3-lobed, the lobes triangular to oblongish, acute, the shorter lateral ones divergent, deep green, with puberulent nerves and a punctate scabrosity above, paler or ash-colored and scabrous beneath, 7-12 cm. long and somewhat narrower, nearly truncate basally or with the basal sinus rounded and 1-1.5 cm. deep and twice as broad; tendrils bifid; staminate peduncles glabrous, filiform, often floriferous to the base, 1-1.5 cm. long; pedicels slightly villous, 1-2 mm. long; calyx tube glabrous, 1.5 mm. broad, the teeth obsolete; corolla yellowish; pistillate flowers subsessile; fruiting peduncle 3-6 cm. long, the strongly gibbous fruits to 3 cm. long, acute, sparsely echinate with flat prickles 3-4 mm. long.—Sometimes the lateral lobes are appendaged by a short lobe directed downward. Variable also in the degree of the obtuse crenation of the leaves, a character which marks the species; leaf lobes extending to the middle, deeply crenate, var. *genuina* Cogn.; leaf lobes short, slightly crenate, var. *Achocchilla* (Spruce) Cogn. (Neg. 27130); leaves deeply lobed, the lobes obscurely crenate, var. *triloba* Cogn.; better marked is the Ecuadorian var. *microphylla* Cogn. with more rigid leaves only half as large. *C. tomentosa* Cogn., if sought here, may be found in a remark under *C. cordifolia*. Negs. 27131, 31070.

Huánuco: Cochero, *Poeppig 1691*, type. Mito, 2,700 meters, on stream bank shrubs, *3336*; flowers greenish yellow or white. Huariaca, 2,850 meters, shrubby canyon side, *3100*. Huánuco, *Ruiz & Pavón*; var. *triloba*.—Ayacucho: Mountains northeast of Huanta, shrubwood in moist ravine, 3,100 meters, *Weberbauer 7511, 7511a*; flowers greenish. Huanta, 2,800 meters, thickets, *Killip & Smith 23329*; fruit bright green; determination somewhat doubtful.—Arequipa: *Raimondi* (det. Harms).—Cuzco: *Herrera 2251* (det. Harms). Gucai, Urubamba Valley, 3,000 meters, *Herrera 1373*. Ollantaitambo, 3,000 meters, *Cook & Gilbert 422*. San Miguel, Urubamba Valley, 1,800 meters, *Cook & Gilbert 963*. "Achoche," "monte achocjcha."

Cyclanthera cordifolia Cogn. Diag. Cucurb. 2: 76. 1877; 850.

Slender, the deeply sulcate stems, striate petioles 2–4 cm. long, bifid tendrils, and greatly elongate, many-flowered peduncles more or less puberulent to villous; leaves ovate-cordate, short-acuminate, the basal sinus 5–10 mm. deep and more than twice as broad, minutely and remotely spinulose-denticulate, typically tomentose beneath except for the hirsutulous nerves, glabrate and somewhat scabrous above; staminate flowers very numerous, in branched racemes to 15 cm. long; calyx 2–2.5 mm. broad, sparsely villous like the greenish corolla; pistillate flowers twice larger, subsessile; fruit densely and coarsely prickly.—Var. *subnuda* Cogn., op. cit. 851, has subglabrous or scarcely tomentose leaves; var. *angustifolia* Cogn. Bot. Jahrb. 42: 174. 1908, has leaves nearly twice longer than broad. *C. tomentosa* Cogn., 849, similar and perhaps extending into Peru, native of Bolivia, is distinguishable chiefly by its triangular or 3-lobed leaves and few 10–30-flowered racemes, much shorter than the leaves. The related (also Bolivian) *C. montana* Cogn. Medd. Rijks Mus. 19: 69. 1913, has petioles to 9 cm. long and simple tendrils. Negs. 27132, 9067 (var. *subnuda*).

Cajamarca: Cutervo, *Raimondi* (det. Harms, as "cf.").—Aya-cucho: Aina, 750–1,000 meters, dense forest, *Killip & Smith 22772* (det. Harms); perianth yellow-green.—Cuzco: Below Pillahuata, 2,000–2,300 meters, in forest, *Pennell 14059* (det. Harms); petals greenish yellow.—Puno: Sandía, *Weberbauer 623*, var. *angustifolia*; 237. Colombia.

Cyclanthera Killipii Standley, sp. nov.

Scandens herbacea, caulibus gracilibus subangulatis glabratibus, ad nodos paullo incrassatis breviter villosulis, internodiis elongatis; folia modica breviter petiolata membranacea, petiolo 6–8 mm. longo sparse villosulo vel fere glabro; lamina 7–9 cm. longa et aequilata profunde triloba, basi cordata, sinu aperto usque 1 cm. alto, in sicco fusca utrinque sat dense conspicue pallido-papillosa, subtus ad nervos sparse villosula, lobis triangulari-oblongis terminali prope basin paullo angustato, omnibus longe sensimque attenuatis, minute remote repando-denticulatis, lamina subtus prope basin glandulis 6–8 crateriformibus depressis onusta; racemi masculi axillares solitarii 3–5 cm. longi laxi multiflori simplices vel furcati, floribus ad nodos fasciculatis, pedicellis gracilibus glabris ad 4 mm. longis; calyx glaber; pedunculi feminei axillares solitarii 1-flori in statu fructifero ad 2 cm. longi; fructus immaturus aculeis inclusis ca. 3 cm. longus atque 2.5 cm. latus glaber ovoideus apice longirostratus,

densissime aculeis crassis longis vestitus.—Peru: Pichis Trail, Dos de Mayo, Dept. Junín, 1,700–1,900 meters, in forest, July, 1929, *E. P. Killip & A. C. Smith 25833* (type in U. S. Nat. Herb.; photo. in Herb. Field Mus.).

Cyclanthera macropoda (Poepp. & Endl.) Cogn. in DC. Monogr. Phan. 3: 853. 1881. *Momordica macropoda* Poepp. & Endl. Nov. Gen. & Sp. 2: 54. pl. 173. 1838. *Elateriopsis macropoda* Cogn. Diag. Cucurb. 2: 84. 1877.

Among Peruvian species well marked by its obvious instead of obsolete calyx teeth, these as much as 2 mm. long, and by its connate anthers; usually also vegetatively by the entire-margined leaves with 3–5 broadly ovate lobes; tendrils trifid; petioles 5–10 cm. long; leaf blades glabrous except for a punctate scabrosity; staminate peduncle 20–30 cm. long, glabrous like the dozen or so pedicels, these 3–6 mm. long; calyx teeth ovate, connivent at the base; pistillate peduncles about 1 cm. long; fruit attenuate to an acute tip, glabrous, 12–15 cm. long.—Compare also *C. explodens* Naud., under *C. Mathewsii*. Neg. 9069.

Huánuco: Tocache, *Poeppig 1966*, type.

Cyclanthera Mathewsii Arn. in Hook. Journ. Bot. 3: 280. 1841; 846.

Delicate, much branching from the base, glabrous or slightly villous except the puberulent peduncles, these (staminate) 2–3 cm. long, with a dozen or more greenish flowers; petioles 2–3 cm. long; leaf blades pale green on both sides and slightly punctate-scabrous, 3–5-lobed, with entire, oblongish lobes strongly constricted at the base, rounded at the tips, the blade 3–5 cm. long and broad, with a basal sinus 3–8 mm. deep; tendrils simple or rarely bifid; pedicels 1–2 mm. long; fruiting peduncles 2–5 mm. long; fruits 12–15 mm. long, subsessile, scarcely gibbous, merely acute, sparsely short-prickly; seeds ovoid, little compressed.—Var. *subintegrifolia* Cogn. has leaves only 5-angled. *C. explodens* Naud., 841, of Ecuador has larger, acutely lobed, denticulate leaves, the fruits echinate with strongly flattened prickles, the seeds compressed. Neg. 27136.

Lima: Amancaes, *Mathews 736*, type. Matucana, *Weberbauer 107*. Near Lima, *Abadía*; *Raimondi*. Obrajillo (*Wilkes Exped.*, det. Gray). Río Chillón near Viscas, 1,800–2,000 meters, open, rocky slopes, *Pennell 14489*, *14485* (det. Harms); corolla deep buff. Atocongo, 250–500 meters, rocky, limestone slopes, *Pennell 14779a* (det. Harms); flowers white. San Gerónimo, 150 meters, stony slope,

5895. Lurín, 60 meters, trailing on sandy loimas along the sea, 5924. Matucana, 2,400 meters, sunny, stony places, 309, 2931.—Moquehua: Mount Estuquiña, 2,000 meters, stony places, *Weberbauer* 7450; flowers greenish.

Cyclanthera microcarpa Cogn. Diag. Cucurb. 2: 75. 1877; 847.

Allied and in general similar to *C. Mathewsii* but with ovate to oblong, entire leaves, rounded or truncate at the base, acute or acuminate; pedicels 3–4 mm. long; fruits very oblique at the rostrate tip, subglobose-gibbous, 5–7 mm. long, the seeds compressed. Negs. 27137, 27138.

Puno: Sandía, *Weberbauer* 832 (det. Cogniaux).—Lima: Road to La Oroya, *Weberbauer* 86 (det. Cogniaux).—Huánuco: Ambo, 3175 (det. Harms). Mito, 3279 (det. Harms). Huacachi, sunny bamboo thicket, flowers deep yellow; leaves oblong; var. *oblongifolia* Cogn. in herb., 4074 (det. Harms). Bolivia.

Cyclanthera pedata (L.) Schrad. Ind. Sem. Hort. Goett. 1831; Linnaea 8: Litt. 23. 1833; 825. *Momordica pedata* L. Sp. Pl. 1009. 1753.

The only Peruvian species with digitate leaves, the 5–7 leaflets sessile or subsessile, lance-oblong, attenuate to the base, the larger terminal ones 7–15 cm. long and about a third as wide; staminate flowers paniculate; calyx teeth setaceous, much shorter than the corolla; fruit sparsely echinate or smooth, rostrate.—*C. tenuisepala* Cogn., 825, has leaflets half as large, flowers in short racemes, calyx teeth longer than the corolla, and fruits extraordinarily echinate; accredited to Peru by Cogniaux, the locality cited by him is rather in Ecuador. The typical form has a large, smooth, edible fruit; cultivated for the fruits in Cuzco (Herrera). Illustrated, Garden 12: 617.

Huánuco: Ruiz & Pavón. Pampayacu and Cochero, *Poeppig* 1612. Huánuco, 2,100 meters, on weeds along ditch, 3495; fruit with a cucumber odor.—Cajamarca: Casas, *Raimondi* (det. Harms).—Río Acre: *Ule* 9879 (var. *edulis*, det. Cogniaux).—Tumbes: Hacienda La Choza, 300 meters, deciduous bushwood, *Weberbauer* 7728; flowers greenish. Plain southeast of Hacienda La Choza, 100–200 meters, *Weberbauer* 7707.—Piura: El Tablazo northeast of Talara, *Haught* F134.—San Martín: Tarapoto, *Williams* 5963. San Roque, 1,400 meters, *Williams* 7624.—Without locality: *Née*.—Ayacucho: Aina, 750–1,000 meters, in clearing, *Killip & Smith* 23820; corolla white.—Loreto: Mishuyacu, 100 meters, in clearing,

Klug 247; flowers white, 945. Puerto Arturo, 200 meters, *Williams 5247*. Bolivia to Mexico. "Caigua," "achoccha," "paigua cimarrona," "caizus," "caihua."

Cyclanthera phyllantha Harms, Notizbl. Bot. Gard. Berlin 11: 776. 1933.

A climbing herb, well marked by the short panicles of greenish flowers, borne from the tips of the petioles; tendrils bifid; petioles 1–2 cm. long, more or less pilose like the stems and young leaves, or glabrate; leaves deeply cordate, with a rounded but narrow sinus, angulately 3–5-lobed, acuminate, remotely short-denticulate, 12–13 cm. long, 8–10 cm. wide; panicle about 1.5 cm. long; many-flowered; pedicels 3–4 mm. long, or some of them shorter; corolla glabrous, 3–4 mm. broad; anthers circuliform.

Cuzco: Lares Valley, near Calca, in evergreen shrub, 2,200 meters, *Weberbauer 7919*, type.

Cyclanthera Siemiradzkii Szysz. Diss. Class. Math. Phys. Acad. Litt. Cracov. 29: 231 (reprint 17). 1894 (as to title page, but often cited as 1895).

Stems slender, angulate-sulcate, glabrous, slightly pubescent at the nodes; petioles 6–10 cm. long; adult leaves finely puncticulate-scabrous and on the nerves of both sides pubescent, 18 cm. long, 17 cm. wide, more or less deeply 5-lobed (the smaller, younger ones 2–3-lobed), the oblong-lanceolate lobes acute, mucronulate, somewhat crenate, the middle one to 15 cm. long, 4 cm. wide, the lateral to 8 cm. long, 3 cm. wide; basal sinus subrotund; tendrils bifid; staminate peduncle 5–6 cm. long, pubescent, 30–40-flowered, often to the base; pedicels often branched; calyx tube pubescent above, 1.5–2 mm. long, the teeth minute or obsolete; corolla yellowish, the lobes triangular; fruiting peduncle robust, puberulent, the fruit gibbous, strongly compressed, with many aculeae.—"Near *C. brachybotrys*."

Peru: Without locality, but probably Cajamarca (*Jelski 314*).

18. ECHINOCYSTIS Torr. & Gray

Closely allied to *Cyclanthera* but the stamens 3, with free or connate anthers, their cells often flexuous. Fruit operculate or dehiscent by 1–2 pores or irregularly rupturing, not gibbous.—The section *Echinopepon* (Naud.) Cogn., containing the Peruvian species; with fruit 1–2-pored or operculate, is apparently accepted by Harms as a genus, the species then requiring fruit for determination.

Echinocystis araneosa Griseb. Abh. Ges. Wiss. Goett. 19: 135. 1879; 810. *Echinopepon araneosa* Cogn. ex Harms, Repert. Sp. Nov. 19: 171. 1923.

Stems deeply sulcate, with the elongate petioles and staminate peduncles long-villous with glistening, spreading trichomes; leaves roundish, cordate, angulately 5-lobed, about 15 cm. long and broad, sparsely pubescent above, more or less densely short-hirsutulous beneath; flowers about a dozen, white, 5-8 mm. long, the slightly shorter calyx silky-villous or tomentose, its teeth 3-4 mm. long; fruiting peduncle 4-6 mm. long; fruit 4-5 cm. long, lanate like the very unequal prickles, the larger prickles 3 cm. long or more, the smaller ones 3-10 mm. long.—*E. muricata* Cogn., known from as near as Guayaquil in the Ruiz and Pavón collections, has more or less 3-5-lobed leaves and sparsely pilose fruits. Neg. 9053.

Piura: Right valley of Río Quirós, Prov. Ayavaca, 1,400 meters, *Weberbauer 6395* (det. Harms).—Tumbes: Mountains southeast of Hacienda La Choza, *Weberbauer 7726* (det. Harms as *Echinopepon*). Bolivia, Argentina.

19. CAYAPONIA Manso

Reference: Cogniaux in DC. Monogr. Phan. 3: 738-797. 1881.

Perennial herbs, usually climbing, with generally palmate-lobed leaves, the flowers variously arranged, only exceptionally dioecious. Calyx and corolla lobes 5, the tube of the former rarely subcylindric, of the latter campanulate or rotate. Stamens 3; filaments free; anthers ordinarily coherent, one of them 1-celled, the cells, unless at the tip, triplicate. Staminodia minute in the pistillate flower. Ovary 3-celled or by abortion 1-celled. Stigmas 3, dilated, reflexed. Fruit globose or ovoid, indehiscent, 1-12-seeded, the erect seeds compressed.—Kuntze, Rev. Gen. 1: 255. 1891, employs the name *Arkezostis* Raf.; his names are not cited here, this reference sufficing. The species are separated with difficulty. The character of the glands used by Cogniaux as important is apparently to be taken with caution, since authoritatively named material of *C. citrullifolia* sometimes is slightly glandular; therefore this character has been used as a secondary one in the following key.

Leaves glabrous beneath or essentially so.

Leaves 3-foliolate.....*C. amazonica*.

Leaves simple.

Calyx tube about 2 cm. long; leaves eglandular. .*C. macrocalyx*.

Calyx tube much shorter; leaves with a few sessile glands beneath near the petiole.

Leaves scabrous above, 3-lobed.....*C. glandulosa*.

Leaves not at all scabrous, not lobed.....*C. oppositifolia*.

Leaves at least somewhat pubescent beneath and definitely so.

Calyces forming dense, long-setose, more or less aggregated heads.

C. capitata.

Calyces not so arranged nor long-setose.

Leaves lightly pubescent beneath, reticulate, densely white-tuberculate-scabrous above; ovary by abortion 1-celled, the fruit 1-seeded, except in *C. citrullifolia*.

Basal sinus of the leaves open, widely spread, the leaf base decurrent.

Sepals 5-6 mm. long.....*C. Tessmannii*.

Sepals scarcely 3 mm. long.....*C. citrullifolia*.

Basal sinus nearly closed, to 1 cm. broad.

Leaves 3-lobed.....*C. Ruizii*.

Leaves 5-lobed.....*C. peruviana*.

Leaves usually densely pubescent beneath, often not markedly reticulate or not tuberculate; ovary 3-celled, the fruit 6-12-seeded.

Leaves not lobate.....*C. Smithii*.

Leaves lobate.

Calyx obconic, the broad lobes 3-3.5 mm. long; leaves eglandular.

Leaf reticulation prominent; calyx villous within.

C. citrullifolia.

Leaf nervation obscure; calyx glabrate within.

C. tomentosa.

Calyx campanulate, the lobes only 1-2 mm. long; leaves glandular beneath near the petiole.....*C. Poeppigii*.

Cayaponia amazonica (Poepp. & Endl.) Cogn. in DC. Monogr. Phan. 3: 797. 1881. *Sechium amazonicum* Poepp. & Endl. Nov. Gen. & Sp. 2: 57. 1838.

Plants large and coarse, sparsely pubescent or glabrate; leaves large, 3-foliolate, the leaflets coriaceous, acute or acuminate, sessile, remotely denticulate or almost entire, with conspicuous veins;

flowers greenish white or white and lilac, large, 4–5 cm. long, pubescent or tomentose; fruit described as being as large as a medium-sized apple, villous.

Loreto: Río Napo near Mazán, 110 meters, *Mexia* 6464; climbing over tall trees; fruit pale green, elliptic, as large as a small lemon. Mishuyacu, 100 meters, in forest, *Klug* 932. Brazil.

Cayaponia capitata Cogn. ex Harms, Repert. Sp. Nov. 22: 340. 1926.

Stems sulcate, sparsely pubescent with spreading hairs; petioles densely villous, 6–9 cm. long; leaves more or less hirsutulous above, densely short-villous beneath, as much as 20 cm. in length and width, deeply 3-lobed, even sometimes to the base, the entire lobes short-acuminate; basal leaf sinus subrectangular, 2–3 cm. deep and broad; tendrils robust, deeply bifid; staminate flowers in sessile, many-flowered heads; calyx tube long-setose, nearly cylindric, rounded at the base, 2 cm. long, equaled by the linear-lanceolate sepals; petals 5–6 mm. long; stamens glabrous, 7 mm. long, the anthers coherent.—The two outer leaf lobes may sometimes bear a lateral lobe half as long. The leaf pubescence above is scabrous, beneath softly villous. The species is allied by the author to *C. podantha* Cogn., 753, of Paraguay, with a conic calyx and solitary or few flowers.

Río Acre: Seringal Estrella, *Ule* 9869, type.

Cayaponia citrullifolia (Griseb.) Cogn. in Griseb. Abh. Ges. Wiss. Goett. 24: 135. 1879; 748. *Antagonia citrullifolia* Griseb. op. cit. 19: 145. 1874.

Stems stout, sulcate, like the petioles (about 5 cm. long) and leaves above scabrous-pubescent; leaves nearly orbicular, ovate at the deeply or widely cordate base, more than 10 cm. broad, pale green above, gray-tomentose beneath or glabrate in age, more or less 3–5-lobed; tendrils bifid; staminate peduncles 4–10 cm. long, densely short-villous like the broadly campanulate calyx tube, this glabrate within, more than 1 cm. long, the erect lobes to 3 mm. long, at least twice as broad; corolla lobes to 2 cm. long, tomentose; filaments filiform, villous below; pistillate flowers smaller, the calyx tube 4–5 mm. long; ovary 3-celled, maturing 6–12 seeds.—Var. *breviloba* Griseb. ex Cogn. has merely 3–5-lobed and entire instead of palmately parted leaves, the staminate flowers racemose instead of mostly solitary. Petals green with white edges (Weberbauer). Neg. 9028.

Piura: Hacienda San Antonio, 1,000 meters, *Weberbauer 6017*; the var. (det. Harms).—Cuzco: Machupicchu, *Soukup 150*.—Junín: La Merced, 600 meters, on sunny brush along river, *5490* (det. Harms). Bolivia, Argentina.

Cayaponia glandulosa (Poepp. & Endl.) Cogn. in DC. Monogr. Phan. 3: 755. 1881. *Bryonia glandulosa* Poepp. & Endl. Nov. Gen. & Sp. 2: 56. pl. 175. 1838.

Similar to *C. Poeppigii*, but the leaves glabrous beneath, the tendrils glabrous and simple; calyx lobes ovate, subequal to the tube, this rounded at the base, purplish or violet like the fruit, which attains a length of more than 2 cm.—The stems and the black, asperous, fleshy roots are more or less suffused with violet within (Poeppig). The flowers are green (Tessmann).

Loreto: Yurimaguas, *Poeppig 2211*, type. Mouth of Río Santiago, *Tessmann 4271* (det. Harms).

Cayaponia macrocalyx Harms, Notizbl. Bot. Gart. Berlin 9: 994. 1926.

Glabrous except for the large flowers, these with somewhat villous, broadly campanulate calyx tube, to 3 cm. long and nearly as wide, the deltoid lobes 3 mm. long, and with a villous-velutinous corolla 1–2 cm. high or more; petioles 4–5 cm. long; leaves about ovate, cuneately narrowed to the petiole, obtuse or acute, entire or shallowly lobed, chartaceous, glabrous or glabrate, white-puncticulate above, sometimes about 10 cm. long and broad; tendrils simple; staminate peduncles axillary, 3–6 cm. long or longer; filaments 3, short, lanate at the base; stamen column about 12 mm. long.—Described from imperfect material and not placed systematically. A liana, the stems 5 cm. thick, 10 meters long; calyx green; corolla whitish without, yellowish within (Tessmann). Large-flowered species from Amazonian Brazil that might be sought here include *C. coriacea* Cogn., 761, and *C. Bonplandii* Cogn., 796, the former with bifid tendrils and filiform calyx teeth, the later with trifid tendrils and trifoliolate leaves. Neg. 9037.

Loreto: Mouth of Río Santiago, Upper Marañón, by a brook in flood-free woods, 160 meters, *Tessmann 4445*, type.

Cayaponia oppositifolia Harms, Notizbl. Bot. Gart. Berlin 9: 994. 1926.

Apparently unique by its opposite, binate or ternate leaves, these entire, glabrous above, obscurely scabrous beneath, acuminate,

obtuse or narrowed at the base, 9–18 cm. long, 4–8 cm. wide, on petioles 2–3 cm. long; staminate flowers in axillary glomerules, on pedicels to 2.5 cm. long; calyx tube 3–4 cm. long, 1.5–2 cm. wide, the nearly setaceous teeth 2–3 mm. long; corolla almost 2 cm. high; filaments 3, somewhat lanate, very short.—Not compared by the author. *C. amazonica* (P. & E.) Cogn., 797, has leaves almost trifoliate and solitary flowers. The collector noted the plant as a liana of high woods, the calyx green, the corolla without green at the middle, at the edges whitish, pale green or almost white within. Neg. 9038.

Loreto: Mouth of Río Santiago on the Marañón, 160 meters, *Tessmann* 4503; and 4869 at Puerto Meléndez (type number not indicated).

Cayaponia peruviana (Poepp. & Endl.) Cogn. in DC. Monogr. Phan. 3: 795. 1881. *Sechium peruvianum* Poepp. & Endl. Nov. Gen. & Sp. 2: 56. pl. 176. 1838.

Stems deeply striate-sulcate, lightly scabrous-pubescent; petioles stout, striate, 5–7 cm. long; leaf blades deep green above, finely white-punctate-scabrous, paler and sparsely puberulent beneath on the reticulate veins, to 15 cm. long and broad, 5-parted nearly to the deeply cordate base; tendrils bifid; staminate flowers densely tomentose, their lobes 5–6 mm. long, the calyx tube more than 2 cm. long, the flowers usually in short racemes of 3–5, the stout, villous-tomentose peduncles as long as 10 cm.; pistillate flowers solitary.—Stems to 60 meters long, tortuous; fruits the size of a small apple, globular, coriaceous, smooth, green, with white, spongy pulp, the seed subglobose, somewhat compressed (Poeppig). The ovary is 1-celled and 1-ovuled.

Huánuco: Pampayacu, *Poeppig* 1506, type.

Cayaponia Poeppigii Cogn. in DC. Monogr. Phan. 3: 756. 1881.

Slender, slightly pubescent, especially on the leaves beneath, these scabrous above, 3-lobed to about the middle, or the upper more nearly entire, 10–20 cm. long and broad, attenuate to the petiole at the scarcely even subcordate base, the petiole 4–7 cm. long; tendrils pubescent, stout, bifid; flowers often several in usually elongate, pubescent racemes; staminate calyx about 1 cm. long, the lobes much shorter, the tube acute at the base; corolla lobes 13 mm. long; filaments 3 mm. long, the anthers coherent; ovary 3-celled; fruit smooth, 1–1.5 cm. long, 6-seeded.—The Ecuadorean *C. Andreana* Cogn., 757, has less divided leaves, simple tendrils, and

free anthers. Both species are marked by the campanulate calyx with short teeth 2-3 mm. long. Neg. 9043.

Huánuco; Cochoero, *Poeppig* 1674, type.—San Martín: Tarapoto, *Ule* 6647; *Spruce* 4545 (both det. Cogniaux).—Loreto: Camani, *Tessmann* 3341 (det. Harms). Ranging to Colombia.

***Cayaponia psederifolia* Standl., sp. nov.**

Scandens, caulibus gracilibus striatis glabris vel glabratis, internodiis elongatis; folia modica crassiuscula ca. 2.5 cm. longe petiolata, petiolo glabro vel glabrato, lamina 3-foliolata sed ob foliola lateralia bipartita spurie 5-foliolata; foliola coriacea oblanceolato-oblonga vel oblonga 5.5-13 cm. longa 2.5-4.5 cm. lata acuta vel breviter acuminata, basin versus vulgo attenuata et sessilia vel brevissime petiolulata, remote obscure repando-denticulata, foliolis lateralibus interdum basi latere exteriore subrotundatis vel obscure subauriculatis, utrinque glabra, opaca costa nervisque supra prominulis subtus prominentibus, venulis subtus prominentibus et arctissime reticulatis; flores masculi in axillis fasciculati graciliter ad 2.5 cm. longe pedicellati, pedicellis ut videtur glabris; calyx extus ubique dense minute glanduloso-scaberulus, tubo late cylindraceo usque 3 cm. longo basi late rotundato vel subtruncato, lobis 5 e basi triangulari subulato-acuminatis ad 3 mm. longis; corolla viridescens ca. 1 cm. longa extus dense minute glanduloso-scaberula, lobis triangularibus acutis tubo duplo longioribus.

San Martín: Zepelacio, near Moyobamba, 1,200-1,600 meters, December, 1933, *Klug* 3475 (type in Herb. Field Mus.).

From all other Peruvian species this differs in its apparently 5-foliolate leaves. It is related, probably, to *C. coriacea* Cogn., which might well be expected to occur in Peru. I have seen no authentic material of *C. coriacea*, but if Cogniaux's description is accurate, the present plant is quite distinct.

***Cayaponia Ruizii* Cogn. in DC. Monogr. Phan. 3: 794. 1881.**

Apparently allied to *C. peruviana*, which it resembles in general character, but the flowers unknown; petioles 3 cm. long; leaf blades rigid, densely white-tuberculate-scabrous above, the deeply cordate sinus nearly closed or to 1 cm. wide, the blades 3-lobed, the lateral lobes spreading; fruiting peduncles axillary, very stout, densely long-villous, 2.5 cm. long; fruit smooth, lustrous, olivaceous, large. Neg. 9046.

Huánuco: Vitoc, *Ruiz & Pavón*, type.

Cayaponia Smithii Standley, sp. nov.

Scandens, herbacea, caulibus gracilibus sparse vel subdense villosis, internodiis elongatis sulcatis; folia majuscula breviter petiolata subcoriacea, petiolo 2-3 cm. longo ut videtur recurvo densissime brunneo-villoso; lamina late ovato-cordata ca. 16 cm. longa atque 11 cm. lata, apice obtusa et breviter cuspidato-acuminata, basi profunde cordata, sinu aperto sed non lato ca. 3 cm. alto, remote repando-denticulata, supra in sicco olivacea, sparse breviter pilosa vel fere glabra, ad costam dense breviter villosa, nervis prominentibus, venulis arctissime reticulatis prominulis, subtus fere concolor ubique sat dense hispidula, basi trinervia, nervis prominentibus, venis quoque prominentibus et arcte reticulatis; flores feminei axillares solitarii, pedunculo fructifero gracili ca. 7.5 cm. longo sparse breviter villosus; fructus globosus sparse villosus ca. 2.5 cm. diam. apice late rotundatus.

Loreto: Río Marañón Valley, Río Morona, 150 meters, in dense forest, in 1929, *E. P. Killip & A. C. Smith 29162* (type in U. S. Nat. Herb.; photo. in Herb. Field Mus.).

It is quite possible that this plant is referable to some genus other than *Cayaponia*.

Cayaponia Tessmannii Harms, Notizbl. Bot. Gart. Berlin 9: 995. 1926.

Very similar vegetatively to the imperfectly known *C. Ruizii*, but the leaves 5-lobed; calyx tube urceolate-campanulate, with scattered, hirsute pubescence without, 3 cm. long or longer, 2.5 cm. broad; calyx teeth broadly lanceolate, 5-6 mm. long; corolla sparsely hirsute without, nearly 2 cm. long; filaments densely villous, about 8 mm. long, the anther column 13 mm. long.—Flowers yellow, greenish below, the calyx green (Tessmann). Neg. 9049.

Loreto: Mouth of Río Apaga, 145 meters, *Tessmann 4814*, type.—San Martín: Juanjuí, 400 meters, in forest, *Klug 3913*; flowers greenish yellow.

Cayaponia tomentosa Cogn. in DC. Monogr. Phan. 3: 747. 1881.

Related to *C. citrullifolia*, from which it differs especially in having the calyx less pubescent without but much more densely pubescent within and smaller, the tube to 7 mm. long, the ovate lobes 2-2.5 mm. long; filaments and anthers subequal.—The leaves are softly pubescent beneath; the calyx lobes of the Madrid specimen are as much as 3.5 mm. long. Neg. 9051.

Huánuco: Vitoc, *Ruiz & Pavón*, type. Casapí (*Mathews 2046*).—Amazonas: Chachapoyas, *Mathews*.—Without locality: *Ruiz & Pavón 26-9*.—Loreto: Iquitos, 120 meters, *Williams 8118* (det. Harms).—San Martín: Tarapoto, *Williams 6558, 6046*. San Roque, 1,400 meters, *Williams 7627*. Zepelacio, 1,200–1,600 meters, in forest, *Klug 3479*. Ecuador.

20. SELYSIA Cogn.

High-climbing vines with simple or bifid tendrils, 3-lobed or undivided leaves, and monoecious flowers, the staminate solitary or fascicled, the pistillate solitary. Sepals 5, minute, the short calyx tube broadly cupulate. Corolla campanulate. Stamens 3, free, with linear filaments; anthers suborbicular, one usually 1-celled, the cells replicate within, curved above, the broad connective not produced. Fruit baccate, indehiscent, 3-celled, the 6 seeds erect.

Selysia prunifera (Poepp. & Endl.) Cogn. in DC. Monogr. Phan. 3: 736. 1881. *Melothria prunifera* Poepp. & Endl. Nov. Gen. & Sp. 2: 55. pl. 174. 1838.

Minutely pubescent or glabrate, the cordate, slightly 3-lobed leaves puberulent on the nerves above and beneath on the reticulate veins; leaf sinus truncate at the petiole attachment, curved at each end by the incurved, hook-like basal leaf lobes, 2–3 cm. wide, 3–4 cm. deep, the blade about 15 cm. long and wide; tendrils bifid; staminate flowers geminate or ternate, the villous peduncle 1–3 cm. long; calyx more pubescent within, 4 mm. long, nearly twice as broad, the teeth 1 mm. high; corolla white, tomentose within, the lanceolate lobes 15 mm. long; pistillate peduncle to 8 cm. long, the lustrous, smooth fruit becoming 4 cm. long.—The Colombian species *S. cordata* Cogn. has entire, scarcely cordate leaves, simple tendrils, and sepals 5–6 mm. long.

Loreto: Mainas at Yurimaguas, *Poeppig*, type. Santa Rosa, 135 meters, in dense forest, *Killip & Smith 28846*; buds yellowish green. Yurimaguas, 135 meters, in forest, *Killip & Smith 28315*, fruit red; in forest, *Williams 4580*. Fortaleza, 200 meters, in forest, *Williams 4256*.

21. CUCUMIS L.

Plants annual or perennial, usually prostrate, commonly hispid or scaberulous; leaves angulate, dentate, or palmately lobate; flowers monoecious, usually small and yellow; staminate flowers fasciculate or rarely solitary, the receptacle campanulate or turbi-

nate, the corolla rotate or subcampanulate, the segments acute; stamens 3, free, the anthers oblong; pistillate flowers solitary; fruit fleshy and indehiscent, many-seeded.—To this genus belong the cucumber, *C. sativus* L., and the muskmelon or canteloupe, *C. Melo* L.

Leaf blades deeply lobate; fruit long-pedunculate, sparsely short-spiny.....*C. Anguria*.

Leaf blades shallowly or not at all lobate; fruit short-pedunculate, densely covered with long, soft spines.....*C. dipsaceus*.

Cucumis Anguria L. Sp. Pl. 1011. 1753.

Plants annual, the prostrate stems hispid; leaves long-petiolate, the blades 5–10 cm. long, deeply 5-lobate, the segments rounded or obtuse at the apex, rough-hispid; corolla yellow, 1 cm. broad; fruit ovoid, as large as a hen's egg, covered with scattered, short, stout spines.—Illustrated, Bot. Mag. *pl.* 5817; Contr. U. S. Nat. Herb. 8: *pl.* 33.

Loreto: Pinto-cocha, *Williams* 1280. Caballo-cocha, *Williams* 2496. Mishuyacu, 100 meters, *Klug* 827.—San Martín: Morales, edge of forest, *Williams* 5695. Juanjuí, 400–800 meters, river bank, *Klug* 4359. Texas to Brazil. "Mashishi."

Cucumis dipsaceus Ehrenb. in Spach, Hist. Nat. Phan. 6: 211. 1838.

Plants annual, prostrate, covered with an abundant pubescence of rather thick, rough hairs; leaves long-petiolate, the blades semi-orbicular or reniform-cordate, rounded at the apex, 5-nerved, usually simple but sometimes rather deeply lobate, 5–10 cm. long and wide; corolla of the staminate flower yellow, villous, 8–9 mm. long; fruit pale yellowish, ovoid-cylindric, 3–5 cm. long, covered with soft spines 5–7 mm. long.

Lima: Lima, roadsides, 150 meters, 55.—Piura: Talara, *Haught F*94, 106. A native of Africa, occasionally introduced in America. "Jabonilla," "friega-mata."

The first vernacular name cited is derived from the fact that the fruit makes a copious lather when rubbed in water.

22. SECHIUM P. Br. Chayote

The genus consists of a single species.

Sechium edule Swartz, Fl. Ind. Occ. 3: 1150. 1800.

Plants scandent, perennial from large, tuberous roots, glabrous or nearly so; leaves long-petiolate, large, somewhat scabrous, the

blades deeply cordate at the base, angulate or shallowly lobate, the lobes entire or remotely denticulate; staminate flowers racemose, on greatly elongate peduncles, the flowers fasciculate along the rachis; corolla greenish, 12–17 mm. wide, deeply lobate; fruit almost as large as a pear, green, 5-sulcate, smooth or covered with spine-like tubercles.

Huánuco: Pampayacu, escaped and growing over trees about dwellings, 1,050 meters, 5104. Widely distributed in cultivation in tropical America; an American plant, but its original habitat uncertain. "Gayota."

The chayote is much grown in tropical America for its large, 1-seeded fruits, which are a popular vegetable in many regions, being eaten when cooked. The young shoots are sometimes cooked and eaten, and the large roots are employed for preparing sweetmeats.

23. LAGENARIA Ser.

The genus consists of a single species.

Lagenaria siceraria (Mol.) Standl. Field Mus. Bot. 3: 435. 1930. *Cucurbita Lagenaria* L. Sp. Pl. 1010. 1753. *C. siceraria* Mol. Sagg. Chil. 133. 1782. *L. vulgaris* Ser. Mém. Soc. Genève 3, pt. 1: 25. 1825. *L. leucantha* Rusby, Mem. Torrey Club 6: 43. 1896.

A large, essentially annual vine, softly pubescent throughout; leaves large, long-petiolate, the blades cordate-rounded, angulate or somewhat lobate, rounded to acuminate at the apex; receptacle of the staminate flower 2–3 cm. long, the petals white, crisped, 3–4 cm. long; ovary dense villous; fruits very variable in form, with a thick, hard shell.

Cuzco: Valle de San Miguel, 2,200 meters, *Herrera 1993*. Urubamba Valley, 1,800 meters, *Cook & Gilbert 877*. Probably native of tropical Africa and Asia, but naturalized in many parts of America.

The large, hard fruits are much used in tropical America for making kitchen utensils, especially dippers and large spoons. The young, tender fruits often are cooked and eaten as a vegetable.

CAMPANULACEAE. Bellflower Family

By Franz Elfried Wimmer, Vienna

References: A. DeCandolle, *Monographie des Campanulacées*, 1830; Engler & Prantl. *Nat. Pflanzenfam.* IV. 5: 40–70. 1889.

Annual or perennial herbs or shrubs, rarely arborescent, often with milky juice. Leaves alternate, rarely opposite, without stipules. Flowers perfect or rarely unisexual, solitary or arranged in panicles,

racemes, or spikes, regular or symmetric, mostly 5-lobed, rarely more or less articulate. Lobes of the calyx distinct. Corolla gamopetalous, bell- or funnel-shaped or tubular, rarely with distinct petals, its tube entire or deeply cleft on one side, the lobes valvate in bud. Stamens as many as the corolla lobes, adnate to the corolla tube or free from it (epipetalous or epigynous), distinct or connate. Anthers free from each other or connate. Ovary inferior (very rarely superior), of 2-5 united carpels, single, 2-5-celled, or the cells rarely more or 1. Style 1, the stigma lobes as many as the ovary cells. Ovules mostly numerous, anatropous, on a central placenta, very rarely on parietal placentae. Fruit a dehiscent capsule or a berry. Seeds small, with a straight embryo in fleshy endosperm.

Very few Campanulaceae are found in Peru except the subfamily Lobelioideae, that is distributed with many species particularly in the alpine region of the Andes. Otherwise the family is chiefly in the temperate zone.

Flowers actinomorphic, the corolla bell-, funnel-, or wheel-shaped, mostly 5-lobed; anthers distinct . . I. Subfam. *Campanuloideae*.

Ovary 3-5- or rarely 2-celled, above rather plane; capsule opening by lateral pores.....1. *Campanulinae*.

Ovary mostly 3-5- or rarely 2-celled, at the summit mostly conically elongate; capsule dehiscent at the apex by 2-5 valves.....2. *Wahlenberginae*.

Ovary only 2-celled; capsule dehiscent by a broad operculum; flowers in a dense, continuous spike.....*Sphenoclea*.

Flowers zygomorphic, the corolla tubular, with 5 unequal lobes, often 2-lipped; anthers always connate in a cylindric tube.

II. Subfam. *Lobelioideae*.

Ovary at the top rather plane; fruit a berry.....1. *Bacciferae*.

Ovary at the apex conical; fruit a capsule.....2. *Capsuliferae*.

Capsule dehiscent by 2 valves at the top; corolla distinctly 2-lipped, the 2 upper lobes mostly smaller...1. *Lobelinae*.

Capsule opening by an operculum at the apex; corolla limb unequally 5-lobed, the upper lobes longer than the lower. Dwarf, caespitose plants of the uppermost region.....2. *Lysipominae*.

1. *Campanuloideae-Campanulinae*

Herbs, rarely shrubby plants. Filaments free from the corolla. Anthers separate or sometimes attached. Style always with col-

lecting hairs. Ovary inferior; placentae central.—In Peru only the following genus.

1. SPECULARIA (Heist.) Fabr.

Annual herbs with alternate leaves. Flowers sessile or very nearly so, axillary and 2-bracted or the upper paniced, the earlier smaller and cleistogamous. Calyx 5- or 3-4-lobed. Corolla rotate, 5-lobed, blue or purplish. Stamens 5, distinct, the flat filaments shorter than the 5 free anthers. Stigma usually 3-lobed. Ovary 3-celled, rarely 2-4-celled; ovules numerous. Capsule slender-cylindric or prismatic, opening by 3 lateral valves. Seeds ovoid, oblong, or lenticular.—About 10 species, natives of the northern hemisphere, one extending into South America.

Specularia biflora (R. & P.) Fisch. & Mey. Ind. Sem. Hort. Petrop. 1: 17. 1835. *Campanula biflora* R. & P. Fl. 2: 55. pl. 200, f. b. 1799. *Legouzia biflora* Britton, Mem. Torrey Club 5: 309. 1894; Britt. & Brown, Ill. Fl. 3: 256. f. 1898. *Specularia perfoliata* A. DC. Monogr. Camp. 351. 1830, p. p.

An erect herb, simple or ramose from near the base, the stems hispid on the angles, 10-35 cm. high; leaves sessile, broadly ovate to oblong, 6-20 mm. long, rounded to acute at the apex, crenate with a few teeth or nearly entire, glabrous or sparsely hispid beneath; flowers in 2's or solitary in the axils; hypanthium obconic-cylindric, short-hispid or glabrous, with 3-5 ovate-lanceolate, cuspidate, entire sepals 2-5 mm. long; corolla blue, 5-parted, 5-7 mm. long, the lobes oblong; capsule oblong-cylindric, 4-6 mm. long, 3-locular, opening by valves close under the calyx lobes. Neg. 29455.

Lima: Provinces of Cercado, Canta, and Chancai, in sandy hills (*Ruiz & Pavón*).—Without locality, *Dombey* 435(?). Elsewhere distributed from Patagonia, 41° S. Lat., to Virginia.

From the very similar *Specularia perfoliata* (L.) A. DC. this differs by the clasping leaves, more flowers in the axils of the leaves, and the capsule, in which the 3 pores are placed at about the middle.

2. Campanuloideae-Wahlenberginae

Herbs or suffruticose plants. Leaves alternate or opposite. Corolla mostly campanulate, more rarely funnel-shaped or eleutheropetalous. Filaments mostly free and dilated to the base. Anthers usually free. Style with collecting hairs or with viscid glands. Ovary mostly 3-5-celled, rarely 2-celled; ovules on a central

placenta, sometimes superior.—Occurring especially in the southern hemisphere of the Old World. In Peru only the following genus.

2. WAHLENBERGIA Schrad.

Calyx with 5-3 lobes. Corolla campanulate or tubular, more or less deeply 5-3-lobed. Stamens 5-3, distinct. Style pilose, especially in the upper part, with 5-2 narrow lobes. Ovary inferior or half-inferior, 5-2-locular. Capsule dehiscent at the summit by as many valves as cells.—Abundant particularly in South Africa, but there are only 12 species in South America, 4 of which have been found in Peru.

Plants prostrate; leaves spatulate-oblong; capsule with 3 valves.

Corolla 5 mm. long; leaves inconspicuously denticulate to the base; stems mostly sparsely pubescent.....4. *W. peruviana*.

Corolla 9 mm. long; leaves and sepals distinctly denticulate; plant glabrous.....5. *W. urcosensis*.

Plants ascending to erect.

Leaves opposite, only a few of the uppermost leaves alternate; hypanthium hemispheric; stigma 3-lobate...2. *W. globularis*.

All leaves alternate; hypanthium obconic; stigma 2-lobate.

Leaves linear.....3. *W. linarioides*.

Leaves lanceolate to elliptic.....1. *W. arida*.

1. *Wahlenbergia arida* (HBK.) Griseb. Goett. Abh. 19: 200. 1874. *Campanula arida* HBK. Nov. Gen. & Sp. 3: 301. 1819. *W. linarioides* var. *arida* A. DC. Monogr. Camp. 158. 1830. *W. calycina* Lechler, Pl. Peruv. No. 1816 (nomen!).

Stem scabrous; leaves lanceolate; calyx lobes more than twice shorter than the ovary, 4-5 times shorter than the capsule and as long as the 5-parted corolla, this 5 mm. long; capsule cylindric, attenuate at the base, 12-17 mm. long.—*W. calycina* differs only by the leaves, which are elliptic or elliptic-oblong, and half as long or shorter. Description according to Grisebach.

Peru: *Lechler 1816* (type of *W. calycina* Schlecht.). Ecuador; Bolivia.

2. *Wahlenbergia globularis* E. Wimm., sp. nov.

Caules ramosi, circiter 30 cm. alti, graciles, striati, inferne defoliati, reverse strigulosi, superne glabrati; folia opposita, superne nonnullis alternantibus, lanceolato-linearata, 10 mm. longa et vix 2 mm. lata, obtusiuscula, basi angustata et breviter petiolata vel

sessilia, margine plerumque 3 denticulis antrorsum versus, supra glabra et nitentia, subtus parce strigosa; rami et ramuli superne nudi, uni- vel pauciflori; pedicelli glabri, 25–30 mm. longi, bractea foliacea multo longiores; hypanthium hemisphericum, glabrum, 3 mm. fere longum et 4 mm. latum; lobi calycini anguste triangulares, obtusiusculi, basin versus 1–2 denticulis muniti, erecti, 4 mm. longi, sinus inter eos plani; corolla campanulata, 11 mm. longa, alba, glabra, tubus corollae ca. 3 mm. longus, lobi oblongi, subacuti, 7 mm. longi et 3 mm. lati; stamina 5 libera 5 mm. longa; filamenta supra basin ovatam et ciliolatam filiformia, deflexa et iterum erecta; antherae anguste triangulares, 2.5 mm. longae; stylus 7 mm. longus, versus apicem parum incrassatus et strigosulus, corollae ca. $\frac{3}{4}$ longitudinem adaequans; stigmatis lobi 3 lineares, obtusi, duplo fere longiores quam latiores, patentes; capsula 3-locularis globosa.

Peru: *Weberbauer 7001* (type in Herb. Field Mus.).

3. *Wahlenbergia linarioides* (Lam.) A. DC. Monogr. Camp. 158. 1830. *Campanula linarioides* Lam. Encycl. 1: 580. 1783. *C. chilensis* Mol. Sagg. Chile ed. 2. 281. 1810. *Breweria linifolia* Spreng. Syst. 1: 614. 1825; Mart. Fl. Bras. 6, pt. 4: 183. pl. 49, f. 1. 1885.

Suffrutescent, 34–55 cm. high, caespitose, glabrous or puberulent; branches simple, erect; leaves sessile, stiff, linear or somewhat dilated to the tip, acuminate, often subdenticulate, 5–17 mm. long, 0.6–4 mm. wide; inflorescence paniced; peduncles pseudodichotomous, much longer than the subtending leaves, the branchlets 1–3-flowered, 25–100 mm. long; pedicels erect, 4–10 mm. long; hypanthium obconic-elongate; sepals triangular, acuminate, denticulate or entire, 2–3 mm. long; corolla funnel-shaped, divided nearly to the middle, 5–6 mm. long, white, distally light blue, the lobes ovate, acute, spreading; stamens 2.5 mm. long; style 5 mm. long, with bilobed stigma; capsule cylindric-obconic, 10-ribbed, bilocular, dehiscent at the apex by 2 obtuse valves; seeds lenticular, glossy, 1 mm. long.

Peru: Probably occurring. Brazil, Uruguay to Chile, Ecuador.

3a. *Wahlenbergia linarioides* var. *filiformis* (R. & P.) A. DC. loc. cit. *Campanula filiformis* R. & P. Fl. 2: 55. pl. 200c. 1799.

Leaves linear, shorter, obtuse, denticulate below, entire above; inflorescence terminal, 3-flowered.

Peru: Without locality, *Ruiz & Pavón*. Chile.

4. *Wahlenbergia peruviana* Gray, Proc. Amer. Acad. 5: 152. 1861; Engler & Drude, Veg. Erde 12: 204. f. 37. 1911.

A small, prostrate, perennial herb, subglabrous or pubescent; leaves alternate, with narrowed, mostly ciliate, subsessile base, spatulate-oblong, 5 mm. long, 2-3 mm. wide, subacute to obtuse, obsoletely denticulate, the uppermost leaves subtending the flowers; flowers solitary-terminal or corymbose; hypanthium broadly turbinate, sparsely pubescent; sepals 5, foliaceous, oblong, acute, 3 mm. long, 5 mm. wide, glabrous, ciliate at the base; corolla campanulate, light blue, 4-6 mm. long, the lobes oblong-acute, 2 mm. long; filaments 1.5 mm. long, expanded to the base from the middle; anthers 0.8 mm. long.

Huánuco: Above Baños in the Andes (A. Gray).—Libertad: Prov. Santiago de Chuco, above the Hacienda Angasmarca, 3,300 meters, *Weberbauer 7199*. Also in Bolivia.

5. *Wahlenbergia urcosensis* E. Wimm., sp. nov.

Herba perennis, humilis, prostrata, glabra, multicaulis; folia alterna, approximata, brevipetiolata, lamina spathulato-oblonga, 5 mm. longa, obtusa, basi attenuata, margine denticulis 2-3 utrinque; flos solitarius, terminalis, folia summa florem fulcrantia; hypanthium late turbinatum, glabrum; sepala oblonga, foliacea, denticulata, 3-4 mm. longa; corolla campanulata, caerulescenti-alba, 9 mm. longa, tubus 3 mm. longus, lobi 5 oblongi, subacuti, 6 mm. longi, 2.5 mm. lati, antherae inter lobos prospicientes; filamenta a vertice usque ad basin sensim dilatata, 2 mm. longa; antherae 5 anguste conicae, 1.5 mm. longae; stylus 4.5 mm. longus, stigma trilobum; capsula ovoidea, apice valvis 3 dehiscent.

Cuzco: Prov. Quispicanchi, Vilcanota Valley near Urcos, 3,800 meters, low grass steppe with isolated shrubs, *Weberbauer 7884* (type in Herb. Field Mus.).

3. *SPHENOCLEA* Gaertn.

Hypanthium adnate to the ovary, broadly hemispheric, the limb 5-parted. Estivation of the flower lobes imbricate. Corolla campanulate, the tube short, the 5 segments broad, incurved. Filaments short, dilated and adnate to the base of the corolla, the 5 anthers free. Style very short, the stigma short-bifid, smooth. Ovary 2-celled; placentae 2, stipitate; ovules numerous. Capsule broadly hemispheric, dehiscent by a nearly flat operculum below the calyx lobes. An annual, fleshy, erect herb.—A genus with one species, widely distributed in the tropics of both hemispheres, in damp places.

Sphenoclea zeylanica Gaertn. Fruct. 1: 113. *pl.* 24. 1788. *Rapinia herbacea* Lour. Fl. Cochinch. 127. 1790. *Gaertnera Pongati* Retz. Obs. Bot. 6: 24. 1791. *Pongatium indicum* Lam. Ill. 1: 444. 1791. *P. spongiosum* Blanco, Fl. Filipin. 86. 1837. *S. Pongatium* A. DC. in DC. Prodr. 7: 548. 1839.

An erect, fleshy, glabrous herb, 30–80 cm. tall; leaves lanceolate to elliptic, 5–7 cm. long, 0.8–3 cm. wide, entire, obtuse or acute, narrowed at the base into a petiole 3–10 mm. long; flower spike on a peduncle of 2–7 cm., the axis thick, 2–6 cm. long; corolla greenish yellow, broadly tubular, 5 mm. long and wide, the 5 lobes broadly ovate, acute, about 1 mm. long.

Peru-Colombia Boundary: Río Putumayo, swamp in forest, *Klug 1615*. Brazil and Ecuador to the West Indies, Africa, and Asia.

II. LOBELIOIDEAE

Annual or perennial herbs or shrubs, rarely arborescent. Leaves alternate, generally simple, petioled. Flowers perfect rarely dioecious, solitary in the axils of the leaves or bracts, often arranged in racemes or corymbs, very rarely in cymes, pedicellate. Calyx (hypanthium) adherent to the ovary, with 5 distinct sepals, these often somewhat unequal. Corolla irregular, tubular, very rarely nearly regular and almost eleutheropetalous, the tube entire or split on the upper side to or nearly to the base, straight or curved, the limb unequally 5-lobed and mostly 2-lipped; upper lip 2-lobed, the lower lip 3-lobed, rarely all the lobes separating at last to the base. Stamens 5, epigynous or epipetalous; filaments wholly or partly connate into a tube; anthers always united into a cylindric tube, this pilose or naked at the orifice or mostly the 2 lower anthers barbate. Gynoecium of 2 carpels. Ovary 2-celled, very rarely 1-celled. Styles terminal and wholly united into a narrow tube; stigma bilobed. Fruit a dehiscent capsule or a fleshy or dry berry. Seeds numerous, very small (0.4–1 mm.), smooth or scrobiculate.—Occurring in all five continents. The centers of distribution are the mountains of Central and South America, South Africa, and the Hawaiian Islands. A number of species are employed as ornamentals and several find use in medicine; the berries and leaves of some are eaten. We know at present about 1,000 species, distributed into 23 genera, of which 7 with 182 species are found in Peru.

Corolla tube cleft at the back, the limb mostly 2-lipped; fruit a capsule, dehiscent at the apex by 2 valves. 9. *Lobelia*.

Corolla tube entire, the limb often unequally 5-lobed, more rarely 2-lipped.

Slender and small herbs, 2-50 cm. high, cespitose or creeping or erect.

Dwarf, creeping plants; leaves reniform to roundish-ovate, long-petioled; fruit a berry.....4. *Hypsela*.

Small, cespitose or moss-like plants; leaves rosulate or imbricate, linear, lanceolate, triangular, or linear-spatulate; fruit a capsule, dehiscent at the apex by an operculum.
10. *Lysipomia*.

Erect herbs; lower leaves ovate, the others gradually narrowed, oblong to linear; fruit a capsule, dehiscent by 2 valves at the apex.....8. *Laurentia*.

Stronger, erect to climbing, suffrutescent plants or shrubs, rarely herbs, 0.5-4 meters high; corolla 2-7 cm. long.

Filaments epigynous or adnate at the base of the corolla; anther tube at the orifice obliquely open and softly pilose or naked or the 2 lower anthers at the apex villous-barbate. Fruit a berry, often inflated.....5. *Burmeistera*.

Filaments adnate to the corolla above the constricted part, rarely free from the corolla and then the corolla tube nearly equally broad; anther tube narrowed at the orifice, the 2 lower anthers cornute or barbate; corolla 2-7 cm. long and usually showy.

Fruit a globose or ovoid berry, crowned with the sepals.
6. *Centropogon*.

Fruit a capsule, dehiscent at the summit by the 2 valves, surrounded by the sepals.....7. *Siphocampylus*.

1. Lobelioideae-Bacciferae

4. HYPSELA Presl

Hypanthium obconic, enervate; sepals 5, triangular. Corolla tubular, the tube entire, cylindric, the limb 5-lobed, somewhat bilabiate. Two lower anthers terminated by 2 bristles and some shorter hairs. Stigma bilobed, the lobes roundish, divaricate. Berry dry, 2-locular, many-seeded, crowned by the connivent sepals.—Only one species is known.

Hypsela reniformis (HBK.) Presl, Prodr. Lobel. 45. 1836.
Lysipomia reniformis HBK. Nov. Gen. & Sp. 3: 320. pl. 266, f. 2.

1819. *L. reniforme* A. DC. in DC. Prodr. 7: 350. 1839. *Pratia longiflora* Hook. f. Fl. Antarct. 2: 325. 1847. *P. repens*, *P. oligophylla*, *P. subsessilis* Wedd. Chlor. And. 2: 9-10. pl. 45. 1857. *P. atacamen-sis* Phil. Fl. Atacam. 34. 1860. *P. pencana* Phil. Anal. Univ. Chil. 53. 1861. *H. oligophylla* Benth. & Hook. f. Gen. Pl. 2: 550. 1876.

A dwarf herb, rooting, glabrous, densely cespitose; leaves long-petioled, roundish-ovate to oval, 2-7 mm. long and broad; peduncle solitary, axillary, shorter than the petiole, this 1-5 mm. long. Calyx lobes triangular, acute, 1.3 mm. long. Corolla white, barely tinted with a pinkish lavender shade, 8-10 mm. long, the tube slightly funnel-shaped, the lobes lanceolate, 3-5 mm. long. Filaments not adnate; anthers dark violet.—It may be noted that the fruit is a real berry and not dehiscent. The genus is distinguished from *Pratia* only by its entire corolla tube.

Arequipa: Arequipa and Malapata, 2,000 meters, *Guenther & Buchtien 1597, 1837, 1888*.—Cuzco: La Raya, wet moor, 4,300-4,500 meters, *Pennell 13502*.—Junín: Cerro de Pasco, 4,600 meters, *2397*. Hacienda Arapa near Yauli, marshy mats, 4,400 meters, *Weberbauer 295*. La Oroya, mat on a brook, 3,900 meters, *Weberbauer*.—Moquehua: Near Volcán Ticsani, Carumas, 4,000 meters, *Weberbauer 7328*. *Mathews 910*.—Puno: Lake Titicaca, on shore, *Mandon 489*. Near Puno, 4,000 meters, *Soukup 100*. Extending from Ecuador to Argentina and in Chile to the Strait of Magellan (*Lechler 1214*).

5. BURMEISTERA Karst. & Triana

Reference: Wimmer, Repert. Sp. Nov. 30: 1-52. ill. 1932.

Stout herbs or suffrutescent plants or shrubs, erect or climbing, sometimes epiphytic. Leaves alternate, entire. Flowers peduncled, solitary in the axils of the upper leaves, very rarely corymbose. Corolla greenish to yellowish, rarely brown-purplish, 14-35 mm. long, its tube entire, straight, at base and throat more or less inflated, at the middle narrowed (*corolla form a*), or rarely the tube from base to limb nearly equally wide (*corolla form b*); limb 5-lobed, the lower lobes shorter than the upper and more deeply separated, all deflexed. Stamens 5, completely connate and exserted, not adnate to the corolla or only at the base. Anther tube cylindric, sub-curved, at the orifice somewhat widened and obliquely cut, all around softly pilose or (rarely) naked or only the 2 lower anthers villous-barbate. Stigma bilobed, the lobes roundish. Berry subglobose to oblong, often inflated, crowned by the sepals. Seeds numerous, brown, shining, hardly 1 mm. in diameter.—Occurring from Guate-

mala to Peru in the Andean mountains on brooks, in humid valleys, and in forests. Of the 70 known species 6 are found in Peru.

Anther tube around the orifice softly pilose or naked . . . 1. *Imberbes*.

Corolla tube narrow cylindric, 4 mm. in diameter, under the inflated limb somewhat constricted, the lobes unequal, falcate, deflexed. Glabrous; leaves oblong, 11 cm. long, 3 cm. wide, at both ends acute, unequally dentate; sepals subulate, spreading, 4–5 mm. long. 4. *B. ramosa*.

Corolla tube widely cylindric, 8 mm. in diameter, 14 mm. long, the limb hardly inflated, the lobes falcate, 10 mm. long.

Sepals sublinear, suberect, 12 mm. long; leaves oblong-ovate, acute, 7.5 cm. long, 4 cm. wide. 5. *B. tricolorata*.

Sepals lance-triangular, spreading, 8–10 mm. long, 4 mm. broad at the base; leaves lance-ovate, acuminate-cuspidate, 7 cm. long, 1.8 cm. wide. 6. *B. Weberbaueri*.

Two lower anthers barbate at the tip; plants ferruginous-stellate-tomentose. II. *Barbatae*.

Leaves lanceolate, 10–17 cm. long, 1.5–3 cm. wide, acute at both ends. 2. *B. macrocarpa*.

Leaves oblong to elliptic-oblong, 12 cm. long, 4.6 cm. wide, acuminate at both ends; sepals linear, 35–40 mm. long.

3. *B. peruviana*.

Leaves elliptic, 12 cm. long, 5.5 cm. wide, short-acuminate, acute at the base; pedicels 7 cm. long (in fruit to 12 cm. long).

1. *B. asteriscus*.

1. *Burmeistera asteriscus* E. Wimm. Repert. Sp. Nov. 38: 5. 1935.

Suffrutescent, ochreous-stellate-tomentose; petioles 15–20 cm. long; leaves elliptic, acuminate, obtuse at the base, densely callous-denticulate, 8.5–12 cm. long, 3.5–5.5 cm. wide, rough above, slightly and on the veins densely tomentose beneath; peduncles axillary, floccose, 7 cm. long, near the base with 2 subulate bractlets; hypanthium semi-ellipsoid, 12 mm. long, 10 mm. wide; sepals lanceolate, callous-denticulate, subglabrous, 16–18 mm. long; corolla 20 mm. long, greenish yellow(?), the lobes sublinear, 12–7 mm. long; filaments glabrous, 32 mm. long; anther tube 8 mm. long, pilose on the sutures, the 2 lower anthers barbate at the apex.

Cuzco: Forest above Pillahuata, Cerro de Cusilluyoc, 2,200–2,400 meters, *Pennell 18959*, type.

2. *Burmeistera macrocarpa* (A. Zahlbr.) E. Wimm. Repert. Sp. Nov. 30: 41. *pl.* 125, *f.* 40. 1932. *Centropogon macrocarpus* A. Zahlbr. Bot. Jahrb. 37: 452. 1906.

A shrub 2 meters high, throughout ferruginous-stellate-pilose; leaves lanceolate, 15 cm. long, 2.5 cm. wide, subacuminate, narrowed at the base into a petiole 7-10 mm. long, callous-denticulate; flowers solitary, axillary, often corymbose at the summit; peduncles 7-10 cm. long, with 2 bractlets at the base; hypanthium obconic-oblong, 20 mm. long and 9 mm. broad; sepals narrowly triangular, denticulate, erect, 15-16 mm. long; corolla greenish, sparsely pilose, 3 cm. long, the tube 14 mm. long, 5 mm. wide, the lobes unequal, falcate, 20-8 mm. long; anther tube pilose on the basal part, otherwise glabrous, 11 mm. long, the 2 lower anthers barbate; berry ovoid, 5 cm. long, 3 cm. wide. Neg. 30990.

Huánuco: Huamalíes, in the mountains south of Monzón, 3,400 meters, *Weberbauer 3344*, type.

3. *Burmeistera peruviana* E. Wimm. Repert. Sp. Nov. 38: 5. 1935.

Suffrutescent, ochreous-tomentose; leaves oblong, 16 cm. long, 4.5 cm. wide, acuminate-cuspidate, at the base acute and narrowed into a petiole 15 mm. long, callous-denticulate; flowers solitary in the axils; peduncles 12-15 cm. long, with 2 subulate bractlets near the base; hypanthium cylindric-oblong, 3 cm. long, 1.2 cm. wide; sepals linear, denticulate, spreading, 35-40 mm. long; corolla greenish yellow, 25 mm. long; berry ovoid, 35 mm. long, 26 mm. wide.

Cuzco: Pillahuata, Cerro de Cusilluyoc, in thicket, 3,200 meters, *Pennell 14138*, type.

4. *Burmeistera ramosa* E. Wimm. Repert. Sp. Nov. 30: 16. *pl.* 124, *f.* 17. 1932.

Suffrutescent, glabrous, branching, epiphytic (only?); petioles 10 mm. long; peduncles nearly 6 cm. long; flowers solitary, axillary; hypanthium turbinate, 5 mm. long; sepals sublinear, denticulate, spreading to subreflexed, 4-5 mm. long; corolla greenish (form a!), 3 cm. long; anther tube whitish, 7 mm. long. Neg. 9073.

Loreto: Forest near Iquitos, 160 meters, *Tessmann 4725*, type.

5. *Burmeistera tricolorata* E. Wimm. Repert. Sp. Nov. 30: 22. *pl.* 125, *f.* 30. 1932.

Suffrutescent, glabrous; petioles 10 mm. long; leaf blades oblong-ovate, acute, subrounded at the base, 5.5 cm. long, 2.5-3.5 cm. wide,

slightly crenate and callous-denticulate, glabrous above, minutely puberulent or glabrate beneath; flowers solitary, on peduncles 5-6 cm. long; hypanthium hemispheric, glabrous, 12 mm. wide; corolla 24 mm. long, puberulent, green, on the upper side purplish, on the lower yellowish, the lobes triangular-linear, 12-10 mm. long; anther tube 8 mm. long.

Cuzco: Pillahuata, Cerro de Cusilluyoc, on Río Pillahuata, 2,400 meters, *Pennell 14001*, type.

6. *Burmeistera Weberbaueri* A. Zahlbr. Bot. Jahrb. 37: 451. 1906; Wimm. op. cit. 21. pl. 125, f. 29.

An herb 1 meter high, glabrous; leaves subsessile, ovate-lanceolate, 3-9 cm. long, 7-2.8 cm. wide, acuminate-cuspidate, rounded or obtuse at the base, densely callous-denticulate; flowers solitary in the axils, crowded at the summit; peduncles 6-8.5 cm. long; hypanthium broadly turbinate, 5 mm. long, 10 mm. wide; corolla brown-red, yellowish within, 22 mm. long (form b!), the lobes 15-8 mm. long; anther tube greenish, 8-10 mm. long. Neg. 9074.

Junín: Tarma, in the mountains east of Huacapistana, 3,200 meters, *Weberbauer 2473*, type.—Without data, *Lobb*.

6. CENTROPOGON Presl

Suffrutescent, shrubby, or rarely herbaceous plants, erect or climbing. Leaves alternate, entire. Flowers solitary in the axils of the upper leaves or in racemes, often crowded at the summit and corymbose, pediceled. Calyx with 5 lobes, these distinct or sometimes connate below. Corolla mostly large and showy; tube cylindric, often curved, constricted above the base, after that expanded abruptly or gradually to the summit (*corolla form a*) or (rarely) almost equally wide from the base to the limb (*corolla form b*); limb with 5 unequal, triangular-linear, falcate, deflexed or spreading lobes, the upper larger than the lateral, the lowest lobe the shortest. Filaments connate into a tube, distinct below and adnate to the corolla above the constricted part (nearly 5-10 mm. above the base). Anther tube cylindric, subcurved, exerted, the 2 lower anthers appendaged at the tip with a triangular scale of concrescent hairs ("cornute," section *Eucentropogon*) or with penicillate hairs ("barbate," section *Siphocampyloides*). Style with 2 roundish stigma lobes. Fruit a 2-celled berry, crowned by the calyx lobes.—The species of the section *Siphocampyloides* can be distinguished certainly from *Siphocampylus* only by the mature fruit. At present

there are known 212 species, distributed in the cordilleras from Mexico to Peru, a few in the mountains of Venezuela, and from Brazil to Argentina. In Peru are found 68 species.

- A. Two shorter anthers with a triangular appendage (cornute) at the apex.....I. *Eucentropogon*.
- B. Flowers solitary in the axils of the leaves and more or less remote.....1. *Axillares*.
- Sepals reflexed, narrowly triangular, denticulate, 10-15 mm. long.....51. *C. puerilis*.
- Sepals erect to spreading.
- Plants hirsute; leaves elliptic-lanceolate, acuminate, acute at the base.....31. *C. hirtus*.
- Plants glabrous, scabrellate, or somewhat pubescent.
- Sepals triangular, 3 mm. long; leaves elliptic, acuminate.32. *C. hypotrichus*.
- Sepals sublinear, 10-20 mm. long.
- Leaves oblong-lanceolate, at both ends long and gradually acuminate, 20 cm. long, 4.5 cm. wide.20. *C. exasperatus*.
- Leaves oblong, ovate-oblong, or oblong-elliptic, acute or acuminate at the apex, acute or subrounded at the base.
- Anthers glabrous; sepals 20 mm. long.38. *C. longipetiolatus*.
- Anthers pilose, sometimes only at the tip; sepals 12-15 mm. long.....14. *C. cornutus*.
- B. Flowers in terminal, lax, elongate racemes; bracts minute or sometimes small and foliaceous; climbing shrubs with pendent branches.....2. *Botryoides*.
- Plants pubescent, except the glossy upper leaf surface; sepals sublinear, suberect, 15-17 mm. long....65. *C. vernicosus*.
- Plants essentially glabrous; sepals 4-11 mm. long.
- Leaves roundish-ovate; bracts roundish.....45. *C. ostrinus*.
- Leaves ovate, elliptic, oblong-lanceolate, or rarely obovate-elliptic.
- Filaments pubescent; anther tube with long, yellowish hairs in the commissures.
- Sepals subulate, erect, 4 mm. long.....52. *C. pulcher*.

- Sepals linear, spreading, 6–7 mm. long. 63. *C. urubambae*.
 Filaments glabrous; anther tube glabrous or scarcely pilose.
 Leaves ovate to broadly elliptic, 6 cm. long, 4 cm. wide,
 narrowed to the obtuse apex; sepals reflexed, 5–8
 mm. long. 6. *C. auratus*.
 Leaves elliptic-oblong and 9 cm. long, 4 cm. wide, or
 oblong-lanceolate, acute to acuminate; sepals spread-
 ing to reflexed, 6–11 cm. long. . . 69. *C. yungasensis*.
- B. Flowers in terminal, short or corymbiform racemes, bracted or
 the subtending leaves much smaller, 1–3 flowers sometimes
 in the axils of the uppermost leaves. 3. *Corymboides*.
- C. Climbing shrubs with pendent branches and long-peduncled,
 upward curved racemes, 0.3–4 meters high; flowers crowded
 at the ends; scars of lower fallen flowers present; bracts
 minute.
 Sepals ovate-triangular, acute, denticulate, 8–10 mm. long.
 15. *C. densiflorus*.
 Sepals triangular or subulate, 2–6 mm. long.
 Peduncles verruculose or shortly squamulose-hispid.
 Leaves oblong-lanceolate, acuminate, acute at the base.
 Corolla 23 mm. long; anther tube glabrous.
 12. *C. casapiensis*.
 Corolla 30 mm. long; anthers pilose. . . 46. *C. parvulus*.
 Leaves elliptic, ovate-elliptic, or obovate-oblong, acute
 or abruptly acuminate; bracts minute.
 29. *C. granulatus*.
 Leaves oblong-elliptic, rounded and shortly acute at the
 tip; bracts subobovate-oblong, 25 mm. long.
 2. *C. alsophilus*.
 Peduncles smooth, glabrous; leaves oblong, acute, or elliptic
 or ovate-elliptic and acuminate. 1. *C. aggregatus*.
- C. Usually erect herbs or shrubs (or also straggling?) with
 ordinarily straight racemes, 0.3–2 meters high; bracts
 minute or small and foliaceous.
 Plants pubescent.
 Sepals triangular, entire, 3 mm. long; leaves elliptic, acu-
 minate at both ends. 62. *C. umbrosus*.
 Sepals sublinear, denticulate, 10 mm. long; leaves oval, 10
 cm. long, 6 cm. wide. 48. *C. pilosulus*.

Plants essentially glabrous.

Leaves fimbriate-denticulate, obovate-oblong or oblong-elliptic.....57. *C. sciaphilus*.

Leaves slightly crenate or callous-denticulate.

Leaves broadly oval, 12 cm. long, 8 cm. wide, abruptly acuminate, rounded at the base....36. *C. latifolius*.

Leaves obovate-oblong, gradually narrowed at the base.

Corolla 22-24 mm. long; leaf tip gradually acuminate.

7. *C. Bangii*.

Corolla 42 mm. long; leaf tip short-acuminate.

39. *C. loretensis*.

Leaves elliptic-oblong-elongate, 25 cm. long, 8 cm. wide, acute to acuminate, acute at the base; sepals sub-linear, recurved at the apex....49. *C. Planchonis*.

C. Erect herbs or suffrutescent plants, 0.25-1.2 meters high; racemes capitate, short-peduncled or subsessile, rarely somewhat elongate; bracts mostly rosulate, surpassed by the large upper leaves.

Sepals connate at the base (*Gamosepali*).

Plants glabrous, at least on the leaves.

Leaves lance-linear, 10 cm. long, 1 cm. wide, gradually tapering to both ends.....58. *C. silvaticus*.

Leaves obovate-oblong or elliptic-oblong, acuminate, cuneate at the base.

Leaves fimbriate-dentate.....34. *C. inflatus*.

Leaves callous-denticulate.

Free parts of the sepals broadly ovate, salient-denticulate.....54. *C. roseus*.

Free parts of calyx lobes narrow-triangular, entire, 10 mm. long, the whole calyx 16 mm. long.

28. *C. grandicephalus*.

Free sepal parts triangular, denticulate, 5 mm. long, with the connate portion at most 12 mm. long.

24. *C. gamosepalus*.

Plants hirsute; sepals narrow-triangular, the connate portion 8-5 mm. long.

Leaves oblong-elliptic, acuminate; corolla hirsute.

26. *C. gesnerioides* var. *zelans*.

Leaves lanceolate, 15 cm. long, 3 cm. wide, acuminate;
corolla glabrous.....18. *C. eurystomus*.

Sepals distinct from the base.

Leaves essentially glabrous.

Bracts lanceolate to linear, 15-20 mm. long (with the
petiole)42. *C. macrophyllus*.

Bracts obovate-spatulate, rounded or abruptly short-
acuminate, 3 cm. long, 2 cm. wide.

Leaves obovate-cuneate.....11. *C. capitatus*.

Leaves oblong-elliptic, acuminate, acute at the base.

11. *C. capitatus* var. *Fieldii*.

Leaves hirsute or scabrellous-puberulent.

Sepals triangular, denticulate, 5-6 mm. long; leaves
elliptic, acuminate at both ends.

25. *C. gesneraeformis*.

Sepals narrow-triangular to sublinear, 7-14 mm. long.

Plants scabrellous-puberulent; leaves lance-elongate,
14 cm. long, 2.5 cm. wide, long-acuminate to both
ends; pedicels 7-8 cm. long....20. *C. exasperatus*.

Plants hirsute throughout.

Pedicels 7-8 cm. long; bracts oblong, obtuse.

31. *C. hirtus*.

Pedicels 2-5 cm. long.

Sepals 14 mm. long; bracts elliptic, acute.

26. *C. gesnerioides*.

Sepals 7-8 mm. long; bracts oblong, subobtuse.

10. *C. caninus*.

A. Two shorter anthers with penicillate hairs at the apex (*Penicil-
lati*).....II. *Syphocampylodes*.

D. Glabrous or pilose plants, the hairs unbranched, simple.

Corolla (form a) tube 2-4 times longer than the lobes.

Plants quite glabrous.

Leaves fimbriate-dentate, oblong, acuminate.

59. *C. subandinus*.

Leaves callous-denticulate, elliptic, subacuminate.

53. *C. reticulatus*.

Plants sparsely pubescent; leaves ovate to elliptic, acute,
unequally dentate.....61. *C. Tessmannii*.

Corolla (form b) tube nearly as long as the upper lobes.

Leaves lanceolate, 44 cm. long, 11 cm. wide, gradually tapering to both ends, densely callous-denticulate. 3. *C. altus*.

Leaves oblong-lanceolate, elliptic, or ovate-oblong.

Plants sordid-brownish-tomentellous; leaves oblong, 23 cm. long, 6 cm. wide, acute, subacute at the base.

8. *C. Brittonianus*.

Plants gray-tomentose.

Leaves oblong-obovate, 25 cm. long, 10 cm. wide, short-acuminate, cuneate to the base 33. *C. incanus*.

Leaves ovate-oblong, acute, rounded at the base.

16. *C. Dombeyanus*.

Leaves ovate, subacute, truncate at the base, 5 cm. long, 3 cm. wide; corolla relatively small, 17 mm. long (genus of this species uncertain, perhaps *Burmeistera*?) 68. *C. Weddellii*.

D. Plants with stellate or branched hairs (*Stellato-tomentosi*).

E. Sepals dentiform or triangular, 1–3 mm. long.

Leaves oval, rounded at the apex; plant densely purple-tomentose 19. *C. erythraeus*.

Leaves ovate, acute; plants ferruginous-tomentose.

60. *C. subcordatus*.

Leaves lanceolate or lance-oblong.

Filaments pubescent; anthers pilose.

Corolla subtomentose, 50 mm. long, nearly straight. 37. *C. longifolius*.

Corolla 30 mm. long, curved 22. *C. ferrugineus*.

Filaments and anthers glabrous; corolla 40–45 mm. long.

Tomentum ferruginous 56. *C. scabiosus*.

Tomentum gray-white, long 44. *C. nervosus*.

E. Sepals narrow-triangular or linear, 4–15 mm. long.

F. Sepals erect to somewhat spreading.

Filaments glabrous; anthers sparsely pilose; leaves oblong-ovate, 5–7 cm. long, 2.3–3 cm. wide, acuminate, rounded at the base. (See also *C. Featherstonei* and *C. verbascifolius*!) 50. *C. Preslii*.

Filaments and anthers pilose (anthers sometimes with few hairs).

Leaves oblong, 8 cm. long, 2.4 cm. wide, subacuminate,
at the base subobtusate; sepals 4 mm. long.

17. *C. erianthus*.

Leaves elliptic or oblong, sometimes obovate-elliptic or
ovate- to obovate-oblong.

Leaves beneath very shortly ochreous-tomentose, 8 cm.
long, 3 cm. wide, elliptic-oblong, acuminate.

Corolla 35 mm. long; sepals 7 mm. long.

5. *C. astrotrichus*.

Corolla 50 mm. long; sepals 12-13 mm. long.

41. *C. Macbridei*.

Leaves beneath densely gray-ochreous- or ferruginous-
tomentose.

Sepals entire, 6-9 mm. long; leaves elliptic or
obovate-elliptic.

Apex of leaves rounded or subacute; plant sordid-
gray-tomentose.....13. *C. comosus*.

Apex of leaves acuminate; plant brown-tomentose.

9. *C. bruno-tomentosus*.

Sepals prominently toothed, 5-9 mm. long.

Leaves oblong (sometimes ovate- or obovate-
oblong), acute, rounded at the base; pedicels
6-17 cm. long.....21. *C. Featherstonei*.

Leaves elliptic (ovate-elliptic), acute or sub-
acuminate, acute to obtuse at the base;
pedicels 3-4 (-8) cm. long.

64. *C. verbascifolius*.

F. Sepals reflexed, lance-linear, 7-8 mm. long; leaves acute,
subacute at the base.....23. *C. fuscus*.

E. Sepals linear to lanceolate, 10-45 mm. long. (Corolla form a.)

Leaves lanceolate to oblong.

Sepals divaricate to reflexed.

Sepals lanceolate, 11-17 mm. long, 3-4 mm. wide;
pedicels without bracteoles, 9-10 cm. long; leaves
lanceolate, acuminate-cuspidate.67. *C. Weberbaueri*.

Sepals linear, salient-denticulate, 30-45 mm. long.

47. *C. perlongus*.

Sepals suberect, linear, salient-denticulate, 10-12 mm. long;
leaves sharply dentate.....4. *C. argutus*.

Leaves elliptic.

Sepals reflexed, lanceolate, 15 mm. long, 5 mm. wide, acute.

23. *C. fuscus* var. *Gleasonii*.

Sepals spreading or suberect.

Plants reddish-yellow-tomentose; leaves acuminate;
sepals lanceolate, acuminate, 14–18 mm. long, 4
mm. wide.....55. *C. rufus*.

Plants gray-yellowish-tomentose; sepals linear, entire.

Leaves very shortly acuminate; sepals 10–15 mm. long.

40. *C. luteus*.

Leaves rounded to obtuse at the apex, rounded at the
base; sepals 18–21 mm. long....30. *C. Hartwegii*.

E. Sepals linear or oblong-lanceolate, 18–30 mm. long. (Corolla
form b.)

Sepals reflexed, linear-lanceolate, acuminate, denticulate in
the upper portion, 20–24 mm. long, 5–7 mm. wide.

27. *C. gloriosus*.

Sepals suberect to somewhat spreading.

Leaves elliptic-oblong, acute, obtuse at the base, 17 cm.
long, 5.5 cm. wide; sepals lanceolate, 18–22 mm. long,
5–8 mm. wide.....43. *C. Mandonis*.

Leaves lanceolate, acuminate, acute at the base.

Hypanthium nearly hemispheric; corolla at the throat
21 mm. wide when pressed.....35. *C. isabellinus*.

Hypanthium cylindric; corolla at throat 10 mm. wide.

66. *C. viriduliflorus*.

1. *Centropogon aggregatus* (Rusby) Gleason, Bull. Torrey
Club 48: 199. 1921. *Siphocampylus aggregatus* Rusby, Bull. N. Y.
Bot. Gard. 8: 122. 1912.

A shrub with slender, pendent branches, 2 meters high, glabrous;
petioles 12 mm. long; leaves oblong, acute, at the base subrounded,
subcrenate, 12 cm. long, 4.5 cm. wide; peduncle 12 cm. long; pedicels
about 3 cm. long, puberulent; hypanthium almost hemispheric;
sepals narrowly triangular, entire, 6 mm. long; corolla red, distally
yellow, falcate-curved, 4 cm. long; filaments pubescent, exserted;
anther tube 8 mm. long, purple-pilose on the fissures.

Peru: Probably occurring. Bolivia.

1a. *Centropogon aggregatus* var. *cardinalis* (A. Zahlbr. & Rech.) E. Wimm., var. nov. *C. cardinalis* A. Zahlbr. & Rech. Medd. Rijks Herb. 19: 51. 1913.

Leaves elliptic, 11 cm. long, 5 cm. wide, acuminate; sepals often somewhat shorter; corolla puberulent, scarlet, the limb orange-red.

Junín: Chanchamayo Valley, 1,200 meters. *Schunke* 347.—Puno: Chunchusmayo, edge of forest, 900 meters, *Weberbauer* 1166. Bolivia.

2. *Centropogon alsophilus* E. Wimm., sp. nov.

Suffrutex scandens, ramis fistulosis herbaceis; folia alterna, internodiis 3 cm. longis; petiolus 5 mm. longus; lamina foliorum elliptica, 9–10 cm. longa, 3.5–5 cm. lata, obtusa et brevissime acuminata, basi obtusa usque subrotundata, margine plano-crenata et callose denticulata, subcoriacea, glabra; flores in racemo bracteato, subelongato; bractee oblongae, 2–3 cm. longae 1–2 cm. latae subrotundatae usque subacutae, basi in petiolum brevem marginatum angustatae vel subsessiles; pedicelli 25–30 mm. longi, puberuli; hypanthium hemisphericum, lobis anguste triangularibus, integris, 4 mm. longis, erectis; corolla kermesina, puberula, subcurvata, 35 mm. longa, tubus a basi usque ad faucem leviter ampliatus, 7 mm. latus; lobi triangulares falcati 10–5 mm. longi; filamenta glabra; antherarum tubus luteolus, pilis paucis obsitus, antherae 2 inferiores cornutae.

San Martín: Zepelacio near Moyobamba, mountain forest, 1,200–1,600 meters, *Klug* 3432 (type in U. S. Nat. Herb.).

3. *Centropogon altus* E. Wimm., sp. nov.

Herba 2.4 m. alta, plerumque simplex, superne saltem sparse hirsuta; folia alterna, petiolo hirsuto 3 cm. longo; lamina lanceolata, 44 cm. longa, 11 cm. lata, in apicem longum sensim acutata, basi acuta, supra furfuracea, subtus ad nervos furfuraceo-viscidula, venis pellucidis subhirta, nervi secundarii sub angulo subrecto excurrentes, 8–15 mm. ab invicem distantes, margine dense callose purpureo-denticulata; flores solitarii axillares; pedicelli hirti crassi 25–28 cm. longi, basi bibracteolati; corolla non visa!; bacca subglobosa, furfuraceo-viscidula, 45 mm. longa, 40 mm. lata.

Huánuco: Tambo de Vaca, 4,000 meters, *Macbride* 4470 (type in Herb. Field Mus.).

4. *Centropogon argutus* E. Wimm. Repert. Sp. Nov. 29: 77. 1931.

Frutescent, ferruginous-stellate-tomentose, mostly more floccose; leaves lanceolate, 7.5 cm. long, 3 cm. wide, subacuminate, narrowed at the base into a petiole 9 mm. long, unequally and sharply dentate, glabrous above, thin, stellate-pubescent beneath; flowers solitary, axillary; pedicels somewhat floccose, 3 cm. long, bibracteolate at the base; sepals linear, 10–12 mm. long, tomentose, with salient teeth; corolla (form a) purple, floccose, nearly straight, 46 mm. long; filament tube glabrous; anther tube pilose on the fissures.

Without locality: *Lobb*, type.

5. *Centropogon astrotrichus* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 735. 1929.

Suffrutescent, shortly ferruginous-stellate-tomentose; leaves elliptic-oblong, 8 cm. long, 3.2 cm. wide, acuminate, narrowed at the base into a petiole 8 mm. long, densely callous-denticulate, above sparsely, beneath densely short-tomentose; flowers axillary; pedicels 7–8.5 cm. long, bibracteolate above the base; hypanthium depressed-globose; sepals linear, 7–8 mm. long, denticulate, erect; corolla red with a yellow limb, 37 mm. long, thinly tomentose (form a); filaments puberulent; anther tube 9 mm. long, nearly glabrous.

Huánuco: Slope from Muña to Tambo de Las Vacas, *Raimondi* 2897, type.

6. *Centropogon auratus* E. Wimm. Repert. Sp. Nov. 19: 243. 1924. *C. rubrovenosus* Gleason, *Torrey* 25: 93. 1925.

A climbing shrub with slender branches; leaves ovate-elliptic, 7 cm. long, 4.5 cm. wide, subacuminate toward the obtuse apex, obtuse to rounded at the base into a petiole 5–10 mm. long, subcrenate and denticulate; pedicels 3–4 cm. long; sepals linear, reflexed, 5–8 mm. long; corolla (form a) scarlet, with a yellow spot at the throat, 32 mm. long; filaments glabrous; anther tube 8 mm. long, short-hirsute at the apex.

Huánuco: In the mountains near Huallaga, 2,400–2,500 meters, *Weberbauer* 6716, type. Near Muña, *Pearce* 532. Huacachi, 2,200 meters, 4104, type of *C. rubrovenosus*.

7. *Centropogon Bangii* A. Zahlbr. Bull. Torrey Club 24: 372. 1897.

An erect herb, the younger parts hirtellous, glabrescent and scabrellous in age; leaves obovate-oblong to nearly oblong, 11–22 cm. long, 4–6 cm. wide, gradually acuminate at the apex, unequally denticulate, gradually narrowed to a short petiole, glabrescent above,

inconspicuously puberulent beneath, somewhat densely so on the veins; inflorescence terminal, subcorymbose, few-flowered; floral leaves much smaller than the upper cauline leaves, about 5 cm. long; pedicels 22–24 mm. long; hypanthium depressed-globose; sepals narrowly triangular, acuminate, 5–6 mm. long, at the base 3 mm. wide, entire, erect; corolla crimson (form a), 22–24 mm. long, 5 mm. wide at the throat, the lobes 7–5 mm. long; filaments pubescent above; anther tube 5 mm. long, slightly pilose.

Perhaps in Peru. Bolivia: Yungas, 1,200 meters, *Bang 500*; *Rusby 1093*.

8. *Centropogon Brittonianus* A. Zahlbr. Bull. Torrey Club 24: 373. 1897. *Siphocampylus giganteus* var. *latifolius* Britton, op. cit. 19: 373. 1892, non Vatke.

A stout, tall herb(?), glabrescent below, the upper parts grayish-fulvous-tomentulose; leaves oblong, 18–22 cm. long, 5–7 cm. wide, subacuminate, narrowed at the base and decurrent into an indefinite petiole, the margin with callous teeth, soon glabrescent on the upper surface, covered with interwoven hairs especially on the veins and when young; pedicels axillary, 16–18 cm. long, tomentulose, with 2 filiform bractlets above the base; hypanthium oblong-ovoid, 15 mm. long, 11 mm. wide, tomentulose; sepals lance-linear, 26–30 mm. long, about 3 mm. wide, glandular-denticulate, suberect, floccose-tomentulose; corolla (form b) orange-red (?), puberulent, its tube 20 mm. long and 11 mm. wide, straight, the lobes sublinear, acutish, subcurved, the upper 20 mm. long and 5 mm. wide, the lower about 10 mm. long; filaments pilose, exserted, not adnate to the corolla; anther tube 15 mm. long, with dense, livid hairs in the 5 commissures.

Peru: Probably. Bolivia.

9. *Centropogon bruneo-tomentosus* E. Wimm., sp. nov.

Rami inferne glabrescentes, superne sicut aliae partes dense bruneo-tomentosi vel floccosi ex pilis ramosis; petioli crassi, 16–25 mm. longi; folia elliptica, 10 cm. longa, 5.6 cm. lata, acuminata, basi late cuneata usque obtusa, margine leviter repanda callose denticulata, membranacea, supra sparse pilosa vel glabrescentia, subtus dense bruneo-tomentosa vel floccosa, nervi laterales ab invicem 5–7 mm. distantes, sub angulo 70° fere recte excurrentes; flores in axillis foliorum solitarii; pedicelli crassi, tomentosi, circiter 7 cm. longi, basi bracteolis 2 linearibus 6 mm. longis ornati; calyx semi-globosus, 10–12 mm. in diametro, tomentosus, eius lobi sublineares, 6–8 mm. longi, tomentosi, erecti, sinus inter eos fere plani; corolla

rubra, tomentosa, 43 mm. longa, tubus supra basin parum attenuatus, dein ad faucem paulum ampliatus, 35 mm. longus, lobi sublineares, falcati, circiter 15-12 mm. longi; filamenta pubescentia, exserta; antherarum tubus 9 mm. longus, fuscus, versus apicem pilis luridis praeditus; antherae 2 inferiores barbatae.

Cajamarca: Prov. Chota, montaña between Llama and Huambo, *Raimondi* 12036 (type in herb. Berlin).

10. *Centropogon caninus* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 734. 1929.

Hirsute throughout; leaves elliptic-lanceolate, 11 cm. long, 3.5 cm. wide, acuminate, cuneately narrowed into a petiole 10 mm. long, densely callous-denticulate and ciliate, sparsely hirsute above, densely so beneath; several flowers in the axils of the uppermost leaves, the others crowded at the summit of the stem; pedicels hirsute, 15-20 mm. long; hypanthium hemispheric; sepals narrowly triangular, entire, 7-8 mm. long; corolla (form a) hirsute, 23 mm. long; stamen tube glabrous.

Junín: Tarma to Chanchamayo, *Raimondi* 2849, type.

11. *Centropogon capitatus* Drake, Journ. de Bot. 3: 238. 1889.

An erect herb, glabrous, 50 cm. high; leaves obovate-oblong, 29 cm. long, 8 cm. wide, acuminate, cuneate to the base and into a petiole 8 mm. long, densely dentate, often slightly puberulent beneath; bracts spatulate-cuneiform, acutish, rounded or truncate at the apex, denticulate or subentire, 3-4 cm. long, 1.4-3 cm. wide, green to reddish; pedicels subumbellate, about 12 mm. long; sepals 10 mm. long, sublinear, denticulate; corolla (form a) inconspicuously puberulent, light pink or red-violet, 3 cm. long; filaments glabrous; anther tube pilose at the base, 6 mm. long. Neg. 29441.

Junín: Chanchamayo valley, *Schunke* 1603, 1604. Eneñas, Pichis Trail, dense forest, *Killip & Smith* 25772. Montaña de Pangoa, Llalla, *Raimondi* 8780.—San Martín: Tarapoto, *Spruce* 4132. Zepelacio, in mountain forest, 1,200-1,600 meters, *Klug* 3500.—Puno: Sangabán, *Lechler* 2163. Type, *Poortman* 198 from Ecuador, near Loja.

11a. *Centropogon capitatus* f. *hirtus* A. Zahlbr. Ann. Hofmus. Wien 6: 436. 1891.

Leaves on the upper surface sparsely, on the lower more densely hispid.

Peru: In dense, subandean forests, marshy places, *Poeppig* 1093. Chicoplaya, *Ruiz & Pavón*.

11b. *Centropogon capitatus* var. *Fieldii* E. Wimm., var. nov.

Folia oblongo-elliptica, 19 cm. longa, 7 cm. lata, margine repandodentata, subtus brevissime hirtella; sepala sublinearia 11 mm. longa; corolla coccinea.

Junín: La Merced, montaña, slope near Hacienda Schunke, *Macbride 5662* (type in Herb. Field Mus.).

11c. *Centropogon capitatus* var. *trichandrus* E. Wimm., var. nov.

Folia plano-crenata cum denticulis callosis inter crenas; sepala lineari-lanceolata integra, 10 mm. longa et in medio 1.6 mm. lata; corolla parum minor, 25 mm. longa; antherarum tubus dense violascenter pilosus.

Cuzco: Paucartambo, Valle de Ckosñipata, 800–1,000 meters, *Herrera 9* (type in herb. Berlin).

12. *Centropogon casapiensis* E. Wimm. Repert. Sp. Nov. 29: 66. *pl. 116, f. 7.* 1931.

Branches pendent, verruculous-scabrous; leaves oblong-lanceolate, 8.5 cm. long, 2.8 cm. wide, acuminate, acute at the base, callous-denticulate, glabrous above, scarcely puberulent beneath; bracts minute, pilose; pedicels 12 mm. long; sepals triangular, 2 mm. long; corolla purple, verruculous-pilose, 23 mm. long (form a); filaments glabrous; anther tube 5 mm. long, pilose on the dorsal side toward the apex.

Amazonas: Chachapoyas, near Casapí, *Mathews 1673* (type in herb. Kew.).

13. *Centropogon comosus* Gleason, Bull. Torrey Club 52: 13. 1925.

A coarsely cinereous-tomentose shrub; petioles stout, 15–30 mm. long; leaf blades thick and firm, elliptic-obovate, the largest 9 cm. long, 5 cm. wide, the upper somewhat reduced, rounded to broadly obtuse and sometimes minutely apiculate at the apex, broadest near the middle or somewhat above it, subcuneate to an obtuse base, minutely denticulate, the upper side scabrellous with stellate hairs, the lower side roughly and densely tomentose with cinereous, branched hairs, especially along the veins; pedicels axillary, stout, 6–8 cm. long; hypanthium broadly hemispheric; sepals linear, 9 mm. long, entire, erect, densely tomentose; corolla brown-tomentose, the tube 88 mm. long, the lobes linear-falcate, strongly decurved, the upper 10 mm. long, the lower shorter; filaments sparsely villous; anther tube 8–9 mm. long; sparsely pilose.

Perhaps in Peru. Ecuador: Prov. Loja, between San Lucas and Ofia, 2,200–3,100 meters, *Hitchcock 21545*, type.

14. **Centropogon cornutus** (L.) Druce. Rept. Bot. Exch. Club Brit. Isles 3: 416. 1914. *Lobelia cornuta* L. Sp. Pl. 930. 1753. *L. surinamensis* L. Sp. Pl. ed. 2. 1320. 1763. *L. andropogon* Cav. Icon. 6: 10. pl. 515. 1801. *L. spectabilis* HBK. Nov. Gen. 3: 306. 1819. *L. purpurea* Vell. Fl. Flum. 353; Icon. 8: pl. 156. 1827. *Siphocampylus macranthus* Pohl, Pl. Bras. Icon. 2: 105. pl. 168. 1831. *S. surinamensis* et *S. andropogon* G. Don, Syst. 3: 702 et 703. 1834. *C. surinamensis* Presl, Prodr. Monogr. Lobel. 48. 1836; Paxt. Mag. Bot. 13: 149. pl. 1847. *C. fastuosus* Dene. Ill. Hort. 181. pl. 1853. —Other illustrations: Bot. Mag. pl. 225; Andr. Bot. Rep. pl. 502; Lodd. Bot. Cab. pl. 749.

Suffrutescent, 1–1.5 meters high, with slender, climbing branches as much as 3 meters long; leaves oblong or ovate-oblong to elliptic and subobovate-oblong, 14 cm. long, 4 cm. wide, acute or acuminate at both ends or at the base obtuse or subrounded, dentate to denticulate, glabrous or scarcely pubescent, narrowed into a petiole 5–15 mm. long; pedicels puberulent, 3.5–5.5 cm. long, bibracteolate above the base; hypanthium hemispheric; sepals sublinear, denticulate, spreading, 12–15 mm. long; corolla purple, carmine, or pink, glabrous, 4–5 cm. long, the lobes unequal, triangular, falcate, spreading, 10–5 mm. long; filaments glabrous; exserted, anther tube long-hispid, 8 mm. long; berry nearly globose, about 15 mm. in diameter, edible.

Huánuco: Posuso, wooded slope, 600 meters, *4714*.—Loreto: Iquitos, trail to San Juan, sandy soil in forest border, *Mexia 6495*; on shrubs, *Williams 8244, 8243*. Pebas on the Amazon, *Williams 1790*. Lower Río Huallaga, forest of Recreo, *Williams 3693*. Florida, *Klug 2245*. *C. cornutus* is widely distributed: all South America to Valparaíso and on the West Indian Islands. Frequently cultivated. The leaves are boiled and eaten.

14a. **Centropogon cornutus** f. *leucostomus* E. Wimm., f. nov.

Frutex 1 m. altus glaberrimus; corolla rosea cum limbo albo.

Huánuco: Between Monzón and the Río Huallaga, 600–700 meters, *Weberbauer 3630* (type in herb. Berlin).

14b. **Centropogon cornutus** var. *laevigatus* (L. f.) E. Wimm., var. nov. *Lobelia laevigata* L. f. Suppl. 392. 1781. *C. laevigatus* A. DC. in DC. Prodr. 7: 344. 1839.

A climbing shrub 2 meters high, commonly quite glabrous; anther tube pilose only at the apex; corolla bright rose.

Loreto: Iquitos, 120 meters, *Williams* 1425, 3529. Mishuyacu, near Iquitos, in forest, 100 meters, *Klug* 1186. Forest near San Francisco, 100 meters, *Tessmann* 3567. Florida, *Klug* 2096. "Gallo-crespa-rango." Huitoto name "puynayma gifire."

15. *Centropogon densiflorus* Benth. Pl. Hartweg. 138. 1844. *C. gracilis* Drake, Journ. de Bot. 3: 238. 1889.

Arborescent, 4-8 meters high, the branches slender, pendent, tuberculate-scabrous; leaves elliptic, often somewhat ovate-elliptic, 11 cm. long, 5.5 cm. wide, very shortly acuminate to the obtuse apex, at the base shortly cuneate to a petiole 10-16 mm. long, remotely glandular-denticulate, glabrous above, subpubescent beneath; bracts sessile, oval; pedicels with calyx and corolla squamulose-pilose, 12 mm. long; hypanthium depressed-globose; sepals ovate-oblong, acutish, suberect, 10 mm. long, 5 mm. wide; corolla (form a) with an inflated throat, orange-red, 3 cm. long, curved; filaments puberulent, exserted; anther tube 8 mm. long, beset along the commissures with short, lilac hairs. Neg. 27222.

Piura: Huancabamba, *André* 4401. Río Cachaco, temperate region, *André* 4581. Ecuador (Yangana), *Hartweg* 775, type.

16. *Centropogon Dombeyanus* (Presl) E. Wimm., comb. nov. *Lobelia Dombeyana* Presl, Prodr. Monogr. Lobel. 39. 1836. *Siphocampylus Dombeyanus* A. DC. in DC. Prodr. 7: 406. 1839.

Branches, leaves beneath, and flowers whitish-tomentose; leaves ovate-oblong, acute, rounded at the base, unequally glandular-toothed, 16 cm. long, 7 cm. wide, glabrous or slightly floccose above; flowers solitary, axillary; pedicels floccose-tomentose, 13 cm. long, bibracteolate at the base; hypanthium obovoid-hemispheric, 18 mm. long and wide; sepals sublinear, gradually tapering to the apex, glandular-denticulate, erect, 27-32 mm. long, 4 mm. wide; corolla (form b) whitish (?), 45 mm. long, about 16 mm. wide at the throat, the 2 upper lobes 27 mm., the 2 lateral 22 mm., the lowest 16 mm. long and 7-8 mm. wide at the base; filament tube tomentose; anther tube densely yellowish-hirsute.—Fruit unknown, the position of this species therefore uncertain!

Junín: Huasa-huasi, *Dombey*, type.

17. *Centropogon erianthus* (Benth.) Benth. & Hook. f. Gen. Pl. 2: 547. 1876. *Siphocampylus erianthus* Benth. Pl. Hartweg. 139. 1844.

A climbing shrub with branches to 5 meters long, ferruginous-tomentose throughout; leaves oblong, acuminate to acute, narrowed to the obtuse base, 7-8 cm. long, 2.5-3.4 cm. wide, callous-denticulate, sparsely stellate-pilose above, densely tomentose beneath, the petiole 8-10 mm. long; flowers solitary in the axils of the upper leaves; pedicels 24-40 mm. long, bibracteolate at the base; hypanthium depressed-globose, with 5 linear, denticulate, suberect sepals 12-15 mm. long; corolla brick-red with a yellow limb, 28-35 mm. long (form a); filaments white-pubescent; anther tube scarcely pilose. Neg. 27224.

Peru: Typical form probably occurring. Ecuador in mountains near Loja, *Hartweg* 778, type; *Poortman* 79.

17a. *Centropogon erianthus* var. *brachysepalus* E. Wimm., var. nov.

Folia aliquanto minora, 8 cm. longa, 2.6 cm. lata; sepala breviora, 3-4 mm. longa.

Amazonas: Chachapoyas, *Mathews* (type in herb. Cambridge).

18. *Centropogon eurystomus* E. Wimm. Repert. Sp. Nov. 29: 60. *pl.* 126, f. 4. 1931.

An erect herb about 50 cm. high; leaves lanceolate, 14-17 cm. long, 3.3-3.8 cm. wide, acuminate, narrowed at the base into a petiole 6-20 mm. long, dentate-denticulate, very sparsely hispid above, hispid beneath especially on the veins; bracts lanceolate, sessile, 2-4 cm. long, pubescent; pedicels glabrous, 2 cm. long, bibracteolate near the base; hypanthium semi-ovoid; sepals connate from the base to the middle, glabrous, the free portion narrow-triangular, entire, 10-12 mm. long; corolla rose-colored, glabrous, 43 mm. long, its tube strongly inflated above the middle, the lobes 10-6 mm. long; stamen tube glabrous; anthers 6 mm. long.

Department unknown: Río Bombonasa, on shady slope, *Spruce* (type in herb. Kew).

19. *Centropogon erythraeus* Drake, Journ. de Bot. 3: 237. 1889.

A shrub 2 meters high, densely purple-stellate-tomentose; leaves coriaceous, oval, rounded at both ends, 5 cm. long, 3 cm. wide, the upper leaf surface, at least, glabrate, the petiole stout, 8 mm. long; flowers solitary in the leaf axils; pedicels 3 cm. long; hypanthium hemispheric, with 5 triangular, acute sepals 2-3 mm. long; corolla (form a) purple, falcate, 4 cm. long; stamen tube pilose. Neg. 30941.

Peru: Probably occurring. Ecuador: Cebadal, near Loja, *Poortman* 283.

20. *Centropogon exasperatus* Presl, Prodr. Monogr. Lobel. 48. 1836. *C. angustus* Gleason, Bull. Torrey Club 52: 54. 1925.

Shrubby, sparsely pubescent-scabrellate; leaves lanceolate, 14 cm. long, 2.5 cm. wide, gradually long-acuminate to both ends and narrowed into a petiole 1 cm. long, sharply and minutely dentate, on the veins shortly hairy beneath; pedicels solitary in the axils of the leaves, 6–8 cm. long, puberulent, bibracteolate at the base; hypanthium depressed-globose, puberulent, with 5 narrow-triangular, entire lobes 10 mm. long; corolla red, puberulent, 35 mm. long (form a); stamen tube glabrous; anthers 7 mm. long.

Huánuco: Mountains, *Herb. Presl*. Vilcabamba on Río Chinchao, 1,800 meters, 4967, type of *C. angustus*.

21. *Centropogon Featherstonei* Gleason, Bull. Torrey Club 52: 17. 1925.

Stems climbing, 3–7 meters long, densely tomentose above with ferruginous, branched hairs; petiole 6–8 mm. long; leaves oblong or ovate-oblong, 11 cm. long, 4 cm. wide, acute, rounded at the base, sharply and finely denticulate, above thinly, beneath densely tomentose; pedicels solitary in the upper axils, 6–15 cm. long, bibracteolate above the base; hypanthium depressed-globose, tomentose; sepals linear, denticulate, suberect, 6–7 mm. long; corolla firecracker-red with yellow, stellate pubescence, 3 cm. long (form a); filaments pubescent; anther tube black, 8 mm. long, sparsely pilose distally.

Huánuco: Huánuco, 3,100 meters, 2125.—Junín: Mito, 2,400 meters, 1605, type.

22. *Centropogon ferrugineus* (L. f.) Gleason, Bull. Torrey Club 52: 11. 1925. *Lobelia ferruginea* L. f. Suppl. 394. 1781. *L. barbata* Cav. Icon. 6: 12. pl. 519. 1801. *Siphocampylus barbatus* G. Don, Gen. Syst. 3: 701. 1834. *C. barbatus* Planch. Fl. Serres 6: 16. 1850 (but *Lobelia ferruginea* HBK. Nov. Gen. & Sp. 3: 303. 1819 and *Siphocampylus ferrugineus* G. Don, loc. cit., are referable to *Centropogon asclepiadeus* [Willd.] Wimm.).

Suffrutescent, with pendent branches and a ferruginous, stellate tomentum; petiole 6 mm. long; leaf blades lanceolate, 3–4 cm. long, 0.7–0.9 cm. wide, acute at both ends, callous-denticulate, on the upper surface sparsely stellate, on the lower surface thinly tomentose, on the veins densely so; pedicels solitary in the leaf axils, 3 cm. long,

without bractlets; hypanthium depressed-globose; sepals triangular, 2-3 mm. long, denticulate, suberect; corolla brick-red, tomentellous, about 3 cm. long (form a); filaments pubescent, exserted; anther tube 6 mm. long, with few long dorsal hairs.

Huánuco: Tambo de Vaca, 3,100 meters, 4445.—Lima: Huamantanga, Obrajillo, *Née Herb.*—Amazonas: Chachapoyas (det. Zahlbr.). Colombia; Ecuador.

23. *Centropogon fuscus* (G. Don) E. Wimm. Repert. Sp. Nov. 22: 201. 1926. *Siphocampylus fuscus* G. Don, Gen. Syst. 3: 704. 1834. *Lobelia fusca* Presl, Prodr. Monogr. Lobel. 40. 1836.

Probably a climbing shrub, the branches and flowers with a dense, brown tomentum; leaves ochreous-tomentose on the lower surface, oblong, 12 cm. long, 4 cm. wide, subacute at both ends, the whole margin with nearly intramarginal, glandular teeth; pedicels 8 cm. long, minutely bibracteolate at the base, axillary; hypanthium hemispheric; sepals oblong-linear, subacute, denticulate, reflexed, 9 mm. long, 3 mm. wide; corolla (form a) purple(?), tomentose, straight, 35 mm. long; filaments pubescent; anther tube beset on the fissures with few sordid hairs. Neg. 27226.

Without locality, *Pavón.*—Huánuco: Vitoc, *Isern 2566* (det. Macbride).

23a. *Centropogon fuscus* var. *Gleasonii* E. Wimm. Repert. Sp. Nov. 38: 16. 1935. *C. rufus* Gleason, Bull. Torrey Club 52: 8. 1925, non Wimm.

A shrub 1 meter high with ochreous tomentum, this becoming more greenish-yellowish on the lower surface of the leaves; petiole 12-20 mm. long; leaf blades elliptic, 15 cm. long, 5.6 cm. wide, short-acuminate, acute at the base, callous-denticulate; pedicels 10 cm. long; sepals oblong, acute, 15 mm. long, 5 mm. wide, reflexed; corolla as in the type, but 45 mm. long and with a more yellowish tomentum.

Huánuco: Tambo de Vaca, 300 meters, 4473, type.

24. *Centropogon gamosepalus* A. Zahlbr. Ann. Naturhist. Mus. Wien 6: 434. 1891.

An erect herb, glabrous; leaves obovate-oblong, 17 cm. long, 6 cm. wide, gradually narrowed into a petiole 5-15 mm. long, abruptly acuminate at the apex, subentire or callous-denticulate, inconspicuously puberulent beneath; bracts dense, spatulate or obovate-oblong, 3 cm. long, 1.6 cm. wide, broadly obtuse at the

apex, cuneate to contracted at the base, mostly sessile; pedicels 2 cm. long, bibracteolate above the base; hypanthium hemispheric, its lobes connate to the middle, the free parts narrowly triangular, acute, 6 mm. long; corolla (form a) rose-colored, 37 mm. long, somewhat inflated at the throat; filaments glabrous; anther tube glabrous or beset with few hairs in the fissures, 6 mm. long. Neg. 30952.

Loreto: Tarapoto, *Spruce 4131*, type. Ecuador.

25. *Centropogon gesneraeformis* Drake, Journ. de Bot. 3: 239. 1889.

An erect, stout, pubescent herb; leaves elliptic, 21 cm. long, 8.5 cm. wide, shortly subacuminate, unequally and minutely dentate, acuminate at the base into an indefinite petiole 15–30 mm. long, hispid above, more densely so beneath; flowers in a capitate raceme with a short peduncle; bracts foliaceous, sessile, 15–30 mm. long; pedicels 3–4 cm. long; hypanthium depressed-globose; sepals 4–5 mm. long, narrow-triangular, acute, subdenticulate, erect; corolla (form a) carmine-red, puberulent, 34 mm. long, the lobes 5–3 mm. long; filaments glabrous; anther tube glabrous except for a few hairs at the base. Neg. 30942.

Peru: Probably. Ecuador (Huancabamba near Loja, *Poortman 224*, type); Colombia.

26. *Centropogon gesnerioides* Gleason, Bull. Torrey Club 52: 53. 1925.

Suffrutescent, 3–4 meters high, subhirsute or with slightly curved, white hairs; leaves obovate-oblong to elliptic, the largest 24 cm. long, 8.5 cm. wide, acuminate, dentate or denticulate, acuminate at the base into an indefinite petiole 2–3 cm. long, thinly hirsute above, more densely so beneath especially along the principal veins; racemes terminal, often elongate; floral leaves elliptic, mostly sessile, 2–3 cm. long, 8–16 mm. wide; pedicels 2 cm. long; hypanthium depressed-globose; sepals triangular, 14–16 mm. long, 5 mm. wide at the base, acuminate, sparsely denticulate, suberect; corolla (form a) red, hirsute, especially distally, curved, 3 cm. long; filaments pubescent toward the summit; anther tube 7 mm. long, pilose along the 3 upper commissures.

Peru: Perhaps occurring. Colombia.

26a. *Centropogon gesnerioides* var. *viperinus* E. Wimm. Repert. Sp. Nov. 38: 6. 1935.

A coarse herb 1.2 meters high; bracts lance-oblong, petiolate; sepals narrowly triangular, free, 10–12 mm. long, 3 mm. wide at the base; corolla rich pink, pubescent; stamens glabrous, exserted.

Junín: Huacapistana, thickets and open woods, 1,800–2,400 meters, *Killip & Smith 24096*, type.

26b. *Centropogon gesnerioides* var. *zelana* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 733. 1929.

Calyx lobes somewhat connate (2–3 mm.) at the base, the free parts triangular, entire, 6–8 mm. long; corolla bright red; stamen tube quite glabrous.

Without data: *Raimondi 2610*; *Ruiz & Pavón*.—Huánuco: Muña, 3982.

It is very probable that *C. gesnerioides*, *C. congestus* Gleason, and *C. caninus* are synonymous with *C. hirtus*.

27. *Centropogon gloriosus* (Britton) A. Zahlbr. Bull. Torrey Club 24: 373, 1897. *Siphocampylus gloriosus* Britton, Bull. Torrey Club 19: 373. 1892.

A shrub, densely ochreous-stellate-tomentose; leaves oblong or ovate-oblong, acuminate, rounded at the base, with a petiole 4–5 mm. long, minutely callous-denticulate, 8–14 cm. long, 3–5 cm. wide, scabrous and sparsely pilose above, especially on the veins, densely tomentose beneath; pedicels solitary in the axils of the upper leaves, densely tomentose, 12–15 cm. long; sepals linear-oblong, acute, denticulate toward the tip, 20–24 mm. long, 5–7 mm. wide at the middle, reflexed, tomentose or glabrescent; corolla crimson, 4–5 mm. long, its tube almost equally wide, slightly expanded to the throat, 2 cm. long, 8 mm. wide at the middle, the lobes 22–15 mm. long; filaments pilose; anther tube densely sordid-brownish-pilose; berry globose, tomentose, 2 cm. in diameter.

Peru: Probably. Bolivia.

28. *Centropogon grandicephalus* A. Zahlbr. Bot. Jahrb. 37: 454. 1906.

A stout herb to 1 meter high; leaves large, subsessile, obovate-oblong, short-subacuminate, gradually narrowed to the base, 20–27 cm. long, 6–9 cm. wide, unequally callous-denticulate; raceme abbreviated, the peduncle 2–8 cm. long; bracts sessile, broadly obovate-cuneate, finely serrulate above, 4–5 cm. long, 2–3 cm. wide; sepals connate from the base to the middle, forming a short tube 6 mm. long, the free parts triangular-linear, entire, 8–10 mm. long; corolla

claret-colored, glabrous, 35 mm. long, inflated at the throat (form a); filaments glabrous; anther tube 6 mm. long, pilose in the fissures.

Amazonas: East of Chachapoyas, woods between the rivers Tambos Almirante and Pucatomba, 1,800–1,900 meters, *Weberbauer 4461*.—San Martín: Between Moyobamba and Chachapoyas, *Raimondi 1894*. San Roque 1,400 meters; *Williams 7032*.

29. *Centropogon granulatus* Presl, Prodr. Monogr. Lobel. 49. 1836. *C. cuspidatus* A. DC. in DC. Prodr. 7: 346. 1839.

A suffrutescent climber, the slender stem and peduncles tuberculate and, at least above, often somewhat puberulent; leaves elliptic, ovate-oblong, or obovate-oblong, 11–28 cm. long, 6–14 cm. wide, acute to abruptly acuminate, acute to obtuse at the base, subcrenate to denticulate, rather thick, glabrous or scabrellate; hypanthium depressed-globose or hemispheric; sepals triangular, 3 mm. long; corolla of form a but at the base somewhat dilated, strongly curved, squamulose-hairy or scabrous, red or orange-red, distally yellow, 35 mm. long; filaments pubescent toward the summit; anther tube 10 mm. long, hispid at the base and distally or along the fissures. Neg. 27228.

Cajamarca: Tabaconas Valley near Hacienda Charape, *Weberbauer 6257*. Cochoero, in dense, subandean woods along brooks, *Poeppig*.—Huánuco: Pampayacu, 1,200 meters, *5088*.—Junín: Chanchamayo Valley, 1,500 meters, *Schunke 347, 1582, 1583*. Vitoc, *Isern 2573*. Hacienda de Esperanza, Chanchamayo, *Raimondi 8687*. Between Tarma and Chanchamayo, *Raimondi 2767*. Between Llama and Pangoa, *Raimondi 1414*, and, without data, *2578*. La Merced, 1,200 meters, *5654, 5088*.—Loreto: Cerro de La Escalera, 1,200 meters, *Ule 6787*.—Puno: Hacienda de San José de Bellavista, *Raimondi 9641*.—San Martín: San Roque, 1,350–1,500 meters, *Williams 2018, 7214, 7693*.—Without locality, *Dombey* (type of *C. cuspidatus* A. DC.).

30. *Centropogon Hartwegi* (Benth.) Benth. & Hook. f. Gen. Pl. 2: 547. 1876. *Siphocampylus Hartwegi* Benth. Pl. Hartweg. 139. 1844.

A shrub with whitish tomentum; leaves elliptic, 10 cm. long, 5 cm. wide, obtuse to subrounded at the apex, rounded at the base, glandular-denticulate, scarcely stellate-pilose above when young, softly whitish-tomentose beneath; flowers axillary, on whitish-tomentose pedicels 5–7 cm. long; hypanthium depressed-globose; sepals lance-linear, obtuse, entire, tomentose without, puberulent

within, 18–21 mm. long, 9 mm. wide; corolla (form a) purple (?), slightly tomentose, curved, 3 cm. long; filaments puberulent, especially on the lower side, exerted; anther tube nearly black, 7 mm. long, sparsely pilose toward the summit. Neg. 27229.

Peru: Probably. Ecuador: In the mountains of Loja, *Hartweg* 777.

31. *Centropogon hirtus* (Cav.) Presl, Prodr. Monogr. Lobel. 48. 1836. *Lobelia hirta* Cav. Icon. 6: 13. pl. 520. 1801. *Siphocampylus hirtus* G. Don, Gen. Syst. 3: 702. 1835.

Hirsute, branched, nearly 2 meters high, suffruticose; petiole 1 cm. long; leaf blades lanceolate, 12–20 cm. long, 3.8–5.2 cm. wide, gradually tapering to both ends, sparsely hirsute above, more densely so beneath; bracts oblong, acute or obtuse, short-petioled, foliaceous, several flowers in the upper leaf axils; pedicels 5–8 cm. long; hypanthium semiglobose; sepals narrow-triangular, erect, 8–12 mm. long, 3 mm. wide at the base; corolla (form a) rich pink, somewhat hirsute, 3 cm. long; stamen tube glabrous; anthers 5 mm. long. Neg. 29443.

Cajamarca: Cochoero, *Dombey*.—Huánuco: Mountains of Huánuco, *Herb. Presl*. Ecuador.

32. *Centropogon hypotrichus* E. Wimm., sp. nov.

Caulis vel rami verruculosi, superne saltem puberuli; folia elliptica, 12 cm. longa, 5.5 cm. lata, acuminata, margine denticulata et ciliolata, basi acuta, in petiolum 18 mm. longum attenuata, supra glabra et vernicosa, subtus puberula et ad nervos pubescentia; flores verisimiliter solitarii in axillis foliorum superiorum (in specimine nostro 1 flos tantum adest!); pedicelli 13 mm. longi, basi bibracteolati; hypanthium hemisphericum, 4 mm. longum et 6 mm. latum; sepala triangularia, 3 mm. longa, denticulata, puberula, sinus eorum rotundati; corolla (form a) kermesina, puberula, 45 mm. longa, leviter curva, ad faucem paullum inflata; lobi corollae triangulares, falcati, 2 superiores 7 mm., 3 inferiores 5–4 mm. longi; filamenta subglabra; antherarum tubus 8 mm. longus et 3 mm. latus, pilis lilacinis in fissuris, antherae 2 inferiores cornutae. Neg. 30956.

Huánuco: Tambillo, *Jelski* 59 (type in herb. Mus. Vienna).

33. *Centropogon incanus* (Britton) A. Zahlbr. Bull. Torrey Club 24: 374. 1897. *Siphocampylus incanus* Britton, Bull. Torrey Club 19: 373. 1892.

A stout herb, whitish-tomentose (hairs simple), smelling disagreeably; leaves obovate-oblong, 27 cm. long, 10 cm. wide, abruptly

acuminate, at the base gradually tapering into a stout, indefinite petiole, glabrous above, white-tomentose beneath, floccose in age; flowers solitary and axillary; pedicels floccose, 14–18 cm. long, with 2 linear bractlets above the base; hypanthium obovoid, 18 mm. long, 15 mm. wide; sepals sublinear, subacute, erect, tomentose-floccose on both sides, 36–40 mm. long, 4–5 mm. wide, glandular-denticulate; corolla (form b) yellowish(?), whitish-floccose, 45 mm. long, at the throat 22 mm. wide when pressed, the upper lobes 30, the lateral 18, the lower 12 mm. long; filaments glabrous; anther tube 15 mm. long, densely sordid-gray-brown-hirsute.

Peru: Probably. Bolivia.

34. *Centropogon inflatus* E. Wimm. Repert. Sp. Nov. 29: 60. 1931.

A glabrous herb; leaves lance-oblong, 18 cm. long, 6 cm. wide, acute, gradually tapering at the base into an indefinite petiole about 1 cm. long, the margin finely fringed; bracts lance-oblong, 10–15 cm. long, 5 mm. wide; pedicels 1 cm. long; hypanthium hemispheric; sepals connate into an inflated tube 11 mm. long and 10 mm. wide, its free portions triangular, fringed, 3 mm. long; corolla red, 3 cm. long, at the throat 7 mm. wide when pressed (form a); stamens glabrous; anthers 6 mm. long.

Peru: Without locality, cultivated by Sander and Sons, type.

35. *Centropogon isabellinus* E. Wimm. Repert. Sp. Nov. 19: 245. 1924.

A brown-stellate-tomentose shrub; leaves lanceolate, 13 cm. long, 3.4 cm. wide, acuminate, acute at the base and narrowed into a petiole 15–20 mm. long, the whole margin with glandular, rather intramarginal teeth, glossy and glabrous above, shortly and densely isabelline-tomentose beneath; flowers axillary; pedicels 9–12 cm. long, with 2 subulate bractlets borne above the base; hypanthium semi-ovoid, 12–20 mm. wide; sepals sublinear, 30 mm. long, 3–4 mm. wide, tapering to the blunt apex, denticulate toward the tip, somewhat spreading, corolla (yellowish?) subtomentose, 55 mm. long (form b); filaments villous, adnate to the corolla at the base; anther tube 17 mm. long, 7 mm. wide, densely hirsute in the fissures.

Cuzco: Lucumayo Valley, 3,600 meters, Cook & Gilbert 1274, type.

36. *Centropogon latifolius* E. Wimm. Repert. Sp. Nov. 38: 7. 1935.

An erect, glabrous herb 60–90 cm. high; leaves broadly oval, 12 cm. long, 8 cm. wide, rounded at both ends, at the apex shortly

abrupt-acuminate, callous-denticulate, the petiole 5–10 mm. long; bracts lanceolate to sublinear; pedicels 20–25 mm. long; sepals 4 mm. long, subulate, erect; corolla orange-red, yellow distally, 26 mm. long (form a); filaments, especially above, pubescent; anther tube 6 mm. long, pilose on the fissures.

Junín: Pichis Trail, Porvenir, in dense forest, 1,500–1,900 meters, Killip & Smith 25918, type.

37. *Centropogon longifolius* E. Wimm. Repert. Sp. Nov. 19: 246. 1924.

Suffrutescent, ferruginous-tomentose; petiole 5 mm. long; leaves lanceolate, 9 cm. long, 2 cm. wide, acuminate, subrounded at the base, callous-denticulate; sepals triangular, acuminate, denticulate, 2–3 mm. long; corolla red(?), subtomentose, 5 cm. long (form a); filaments pubescent; anther tube 9 mm. long, sparsely hirsute. Neg. 30959.

Junín: Huanacabra, Mathews 1186, type.

38. *Centropogon longipetiolatus* E. Wimm. Repert. Sp. Nov. 26: 5. 1929.

Leaves elliptic, oblong, or subovate-oblong, 8–9.5 cm. long, 3–3.5 cm. wide, acuminate, acute at the base, narrowed into a petiole 2–5 cm. long, subcrenate and between the crenations denticulate, shining and glabrous above, slightly puberulent beneath; pedicels about 4 cm. long, puberulent, with 2 sublinear bractlets 1 cm. long above the base; sepals 2 cm. long, sublinear, denticulate, puberulent, somewhat spreading; corolla red, very sparsely puberulent, 42 mm. long, the tube 35 mm. long, gradually dilated to the throat (14 mm.), the lobes triangular, falcate, 10–7 mm. long; stamens glabrous; anthers 9 mm. long.—Flower and leaf figured, Repert. Sp. Nov. 22: pl. 32, f. 7. Neg. 27232.

Amazonas: Andes of Chachapoyas, Mathews, type.

39. *Centropogon lorentensis* E. Wimm., sp. nov.

Herba glabra erecta, verisimiliter ramis elongatis vel subscandentibus; folia alterna, membranacea, luteo-viridia, obovato-oblonga, 17–27 cm. longa, 5–10 cm. lata, apice breviter et abrupte fere acuminata, ad basin longe cuneata et in petiolum 2 cm. longum attenuata, margine crenata, nervi laterales sub angulo semirecto arcuatim ascendentes; flores in racemo sublaxo, 20 cm. longo, bracteato; bracteae lanceolatae, acutae, pedicellum fere aequantes; pedicelli ca. 25 mm. longi, glabri, basi minute bibracteolati; hypanthium

semi-ovoideum, 5 mm. longum et latum; sepala sublinearia, 5 mm. longa, subintegra, erecta, sinus inter ea rotundati; corolla 4 cm. longa, purpurea, versus apicem aurantiaca, tubus corollae supra basin parum constrictus (3 mm.) dein paulum sensim ampliatus et valde curvatus, ad faucem ca. 9 mm. latus; lobi triangulari-lineares, falcati, 2 superiores 10, 3 inferiores 6–5 mm. longi; filamenta in tubum angustum connata, pubescentia, 4 cm. longa; antherarum tubus flavo-cinereus, in commissuris pilis longiusculis lutescentibus praeditus, 8 mm. longus; antherae 2 inferiores apice appendice triangulari munitae; stigma bilobum, lobi subrotundi, divaricati.—*C. granuloso* affinis.

Loreto: Forest below Pongo de Manseriche, 155 meters, *G. Tessmann* 3906 (type in herb. Berlin).

40. *Centropogon luteus* E. Wimm. Repert. Sp. Nov. 19: 247. 1924. *C. aurantiacus* Gleason, Bull. Torrey Club 52: 7. 1925. *C. Caoutchouc* Gleason, loc. cit. saltem p. p.

Suffrutescent, with climbing branches, glabrescent below, ochreous-tomentose above; leaves elliptic, 11–17 cm. long, 5–7 cm. wide, abruptly short-acuminate at the apex, acute to subrounded at the base, narrowed into a petiole 11–15 mm. long, subentire or callous-denticulate, the upper surface thinly and minutely stellate-pilose, the lower thinly and on the veins densely cinereous-ochreous-stellate-tomentose; pedicels axillary, 3–6 cm. long, bibracteolate at the base; hypanthium depressed-globose, tomentose; sepals sublinear, 10–17 mm. long, tapering regularly to the tip, entire or few-denticulate, thinly tomentose, erect; corolla 4 cm. long, yellow or orange-red without, yellow within, thinly stellate-pilose (form a); filaments pubescent; anther tube 8 mm. long, beset with long, sordid hairs, or glabrate.

Huánuco: Muña, trail to Tambo de Vaca, among shrubs, 2,300 meters, 4306. Colombia; Ecuador.

41. *Centropogon Macbridei* Gleason, Bull. Torrey Club 52: 18. 1925.

Stem shrubby, climbing, 5 meters long, densely ferruginous with stellate tomentum when young; petiole stout, 9–15 mm. long; leaf blades elliptic-oblong to elliptic-rhomboid, 10–12 cm. long, 4–4.5 cm. wide, subacuminate, cuneate to the base, callous-denticulate, the upper surface rough with stellate pubescence, thinly so on the surface, densely so along the midvein, similarly pubescent on the lower surface and with rows of crowded hairs on the veins and

veinlets; pedicels 7–11 cm. long, tomentose, minutely subulate-bracteolate near the base; sepals linear-triangular, 12–15 mm. long, tomentose, with a few minute, callous teeth, suberect; corolla orange-red without, yellow within, about 45 mm. long (form a); filaments pubescent; anther tube 9–10 mm. long, glabrous or with scattered hairs on the connectives.

Huánuco: Huacachi, near Mufia, 2,000 meters, 4183, type. Colombia.

42. *Centropogon macrophyllus* (G. Don) E. Wimm. Notizbl. Bot. Gart. Berlin 10: 733. 1929. *Siphocampylus macrophyllus* G. Don, Syst. 3: 704. 1834. *Lobelia macrophylla* Presl, Prodr. Monogr. Lobel. 39. 1836. *C. amplifolius* Vatke, Linnaea 38: 716. 1874.

A stout, nearly glabrous, erect herb; leaves obovate-oblong, 22 cm. long, 7–10 cm. wide, short-acuminate, long-cuneate into an indefinite petiole about 2 cm. long, subentire with callous teeth, glabrous or beneath inconspicuously puberulent; bracts oblanceolate-linear to linear, 15–27 cm. long; pedicels 15–30 mm. long, glabrous or puberulent; sepals 10–16 mm. long, entire, erect, sublinear; corolla rose-colored, glabrous, 3–4 cm. long (form a); filaments puberulent toward the summit; anther tube pilose at the base, 6 mm. long. Neg. 29444.

Peru: Without data, Pavón; Warscewicz 10.—Huánuco: Cochero, Poeppig 1093 (type of *C. amplifolius*). Colombia.

42a. *Centropogon macrophyllus* f. *minoratus* E. Wimm., f. nov.

In omnibus partibus minor; pedicelli 12–15 mm. longi; sepala 7 mm. longa; corolla 28 mm. longa; antherae pilosae, 5 mm. longae.

Junín: Chanchamayo Valley, 1,200 meters, Schunke 1778 (type in Herb. Field Mus.).

43. *Centropogon Mandonis* A. Zahlbr. Ann. Hofmus. Wien 6: 438. 1891.

Suffrutescent, with ferruginous-tomentose branches; petioles 6–8 mm. long, tomentose; leaf blades lance-oblong, 10–12 cm. long, 3–4 cm. wide, subacuminate, acute at the base, densely callous-denticulate, above rough with sparse, stellate hairs, beneath sub-tomentose on the midrib and veins; pedicels axillary, 12–14 cm. long, tomentose, bibracteolate above the base; hypanthium nearly globose, about 1 cm. in diameter; sepals lanceolate or ovate-oblong,

15-25 mm. long, 4-8 mm. wide, acute, denticulate, erect; corolla (form b) red, scarcely tomentose, 35 mm. long, at the throat 12 mm. wide when pressed, the lobes 22-16 mm. long; filaments adnate to the corolla base, pubescent toward the upper portion; anther tube densely hirsute, 15 mm. long. Neg. 9098.

Puno: Between Sandía and Cucuyo, bushes near the river, 2,800 meters, *Weberbauer 880*. More frequent in Bolivia.

44. *Centropogon nervosus* E. Wimm. Bull. Torrey Club 52: 13. 1925.

A tall shrub with whitish-yellowish tomentum; leaves oblong-elliptic, 21 cm. long, 7 cm. wide, tapering regularly to an acute or subacuminate apex, cuneate to a petiole 15-25 mm. long, callous-denticulate, both surfaces thinly stellate-pilose, more densely so along the veins, the lateral veins numerous, 4-5 mm. apart, almost straight, ascending; pedicels axillary, 4-7 cm. long, bibracteolate above the base; sepals triangular, 3 mm. long, entire; corolla 4 cm. long, red, tomentose (form a); filaments and anthers glabrous.

Cuzco: Lucumayo Valley, 1,800-3,600 meters, *Cook & Gilbert 1374*, type.

45. *Centropogon ostrinus* E. Wimm. Repert. Sp. Nov. 29: 67. 1931.

A climbing, suffrutescent plant with pendent branches, quite glabrous; petiole 5 mm. long; leaves ovate-rounded to oval-rounded, 4.5 cm. long, 3.5 cm. wide, rounded at both ends, slightly crenate, pale beneath; flowers in an elongate raceme; bracts round, about 2 cm. long; pedicels 3-4 cm. long; hypanthium hemispheric; sepals 9 mm. long, 2-3 mm. wide, linear, obtuse, undulate, reflexed; corolla (form a) purple, 32 mm. long; filaments glabrous, exserted; anther tube 6 mm. long, glabrous, gray-blue and purple-striate.

Peru: Without locality, *Leau*.

46. *Centropogon parvulus* Gleason, Bull. Torrey Club 52: 56. 1925.

Branches climbing, faintly striate and scabrous-pubescent; petiole stout, puberulent, 4 mm. long; leaf blade oblong-lanceolate or narrowly oblong-elliptic, 8-12 cm. long, 2.5-3.5 cm. wide, acuminate, sharply dentate, gradually tapering to an acute base, glabrous above, minutely puberulent on the veins beneath; pedicels 15-25 mm. long; hypanthium semi-ovoid; sepals triangular, 3 mm. long, glabrous; corolla 33 mm. long, yellow, red toward the base, scabrellate (form a);

filaments pubescent toward the summit; anther tube hirsute with pale yellow hairs.

Huánuco: Cushi, in forest, 1,500 meters, 4848, type.

47. *Centropogon perlongus* Gleason, Bull. Torrey Club 52: 19. 1925.

A tall shrub, densely tomentose with fulvous hairs, glabrescent in age; petiole 15 mm. long; leaf blades ovate-lanceolate or oblong-lanceolate, those subtending the flowers 11-19 cm. long, 3.5-5 cm. wide, acute or subacuminate, obtuse to subrotund at the base, prominently callous-denticulate, thinly fulvous-stellate on the upper surface, more densely so on the principal veins, beneath pale green, thinly cinereous-stellate on the surface, densely so on the veins; pedicels axillary, 13-15 cm. long, tomentose, bibracteolate above the base; hypanthium short-cylindric, 12 mm. long and wide, densely fulvous-stellate; sepals linear, 25-40 mm. long, 2-3 mm. wide, remotely callous-denticulate, spreading to reflexed; corolla 5 cm. long, tomentose, the lobes all strongly deflexed, the upper pair 22 mm. long; filaments villous; anther tube 1 cm. long, strongly hirsute with yellow hairs in the fissures, especially distally; berry broadly ellipsoid, 3 cm. long, crowned by the persistent sepals, 5-6 cm. long.

Cuzco: Lucumayo Valley, 1,800-3,600 meters, Cook & Gilbert 1355, type.

48. *Centropogon pilosulus* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 732. 1929. *C. pamplonensis* E. Wimm. var. *peruvianus* E. Wimm. op. cit. 734.

A suffrutescent, pilose herb; petioles 5 mm. long; leaves oval, 10 cm. long, 6 cm. wide, acute, subrotund at the base, callous-denticulate, glabrous and shining above, pale and hirsute beneath; flowers in a short, terminal raceme; bracts elliptic, acute, sessile, about 1 cm. long; pedicels 20-25 mm. long; sepals sublinear, 8-11 mm. long, 2 mm. wide, acute, subdenticulate, suberect; corolla orange-red 32 mm. long (form a); filaments glabrous; anther tube 7-8 mm. long, short-pilose.

Cajamarca: Prov. Jaén, Chirinos, *Raimondi* 658. Prov. Hualgayoc, montaña de Nanchó, orilla de un riachuelo, 2,400 meters, *Raimondi* 4597.

49. *Centropogon Planchonis* A. Zahlbr. Repert. Sp. Nov. 14: 133. 1915. *C. pedicellaris* Gleason, var. *gallerensis* Gleason, Bull. Torrey Club 52: 58. 1925.

An herb 0.9–1.2 meters high, few-branched; leaves elliptic-oblong, 17–29 cm. long, 4.5–7.2 cm. wide, gradually tapering to both ends, with an acute apex, narrowed into a petiole 12–15 mm. long, crenate, with callous teeth between the crenations, thin, glabrous, somewhat glossy; flowers in a short, terminal raceme; bracts foliaceous, 4–1 cm. long, puberulent; pedicels 15–20 mm. long, puberulent, minutely bibracteolate at the base; sepals sublinear, 5–8 mm. long, erect with recurved apex, entire or subdenticulate, puberulent; corolla 36–43 mm. long, puberulent (form a); filaments glabrous; anther tube 7–8 mm. long, hirsute.

Loreto: Balsapuerto, lower Río Huallaga basin, dense forest, 150–350 meters, *Killip & Smith 28342, 28648*. Pebas on the Amazon River, *Williams 1695, 1788, 1793, 1904, 1929*. Colombia.

50. *Centropogon Preslii* E. Wimm. Repert. Sp. Nov. 19: 248. 1924.

A climbing shrub, ferruginous-tomentose, with slender branches; petioles 4–5 mm. long; leaves ovate-oblong, 5–7 cm. long, 2–2.5 cm. wide, rotund to subcordate at the base, callous-denticulate, sparsely stellate-pilose above, densely tomentose beneath; flowers axillary; pedicels 2–5 cm. long, tomentose, bibracteolate at the base; sepals linear, 5–7 (11) mm. long, denticulate, suberect; corolla red, 32 mm. long (form a); filaments puberulent; anther tube sparsely hirsute distally or glabrous. Neg. 27238.

Peru: "In montibus Tunguragua," *Herb. Presl* (probably an error).—Junín: Camino de Vitoc a los altos de Palca, *Isern 2297*. Ecuador (Andes of Quito, *Spruce 5022, Jameson 492*).

51. *Centropogon puerilis* E. Wimm. Repert. Sp. Nov. 29: 68. 1931.

A glabrous shrub to 2 meters high; petiole 1 cm. long, slender; leaf blades oblong-elliptic to ovate-oblong, 5–6 cm. long, 2–3 cm. wide, acuminate or acute, obtuse or rounded at the base, sharply dentate; pedicels 35–45 mm. long, with 2 bractlets near the base; hypanthium hemispheric, 7 mm. wide; sepals linear, 10–13 mm. long, few-denticulate, reflexed; corolla (form a) rose-colored, 36–40 mm. long; filaments glabrous; anther tube 7 mm. long, hirsute.

Peru: Without locality, *Mathews 1670*.—San Martín: Zepelacio, near Moyobamba, mountain forest, 1,200–1,600 meters, *Klug 3398*.

52. *Centropogon pulcher* A. Zahlbr. Bot. Jahrb. 37: 451. 1906.

A climbing shrub with pendent branches; petioles glabrous, 8–15 mm. long; leaves ovate-oblong to oblong, 7–9.5 cm. long,

2.5-4 cm. wide, short-acuminate, acute at the base, subcrenate, glabrous; hypanthium hemispheric; sepals linear, 4 mm. long, subdenticulate, erect; corolla red, puberulent, curved, 3 cm. long (form a) filaments pubescent; anther tube long-pilose in the 3 upper fissures.

Unín: Prov. Tarma, mountains east of Haucapistana, among bushes, 2,000 meters, *Weberbauer 2164*, type.

53. *Centropogon reticulatus* Drake, Journ. de Bot. 3: 238. 1889.

An erect, glabrous herb; leaves elliptic, 9 cm. long, 4 cm. wide, subacuminate, acute at the base and narrowed into a petiole 15-24 mm. long, minutely denticulate, beneath reticulate-venose, pale; pedicels axillary, shorter than the subtending leaves, 6 cm. long, bibracteolate at the base; hypanthium depressed-globose; sepals triangular, acuminate, entire, somewhat spreading, 3 mm. long; corolla (form a) 3 cm. long, violet, the upper lobes 11 mm. long, the lower 6-4 mm. long; filaments puberulent, exserted; anther tube 7 mm. long, glabrous. Neg. 30945.

Peru: Probably. Ecuador, near Loja, *André*.

54. *Centropogon roseus* Rusby, Bull. N. Y. Bot. Gard. 8: 123. 1912.

An herb 1.2 meters high; leaves lanceolate or somewhat obovate-lanceolate, 15-30 cm. long, 5-8 cm. wide, subacuminate, the margin with dense, sharp, salient teeth, gradually narrowed into the indefinite petiole, glabrous; bracts foliaceous, 25-40 mm. long; pedicels 25-30 mm. long; hypanthium hemispheric; sepals connate for 7 mm., the free parts ovate, densely salient-denticulate, 3-4 mm. long; corolla (form a) rose-colored, glabrous, 35 mm. long, strongly curved; stamens glabrous.

Peru: Probably occurring. Bolivia (Dept. La Paz, Tumupasa, *Williams 584*).

55. *Centropogon rufus* E. Wimm. Repert. Sp. Nov. 19: 249. 1924.

A shrub 2 meters high, with dense, reddish-yellowish tomentum; petioles stout, 15-25 mm. long; leaves elliptic, 12 cm. long, 5 cm. wide, acuminate, narrowed to the rounded or obtuse base, subentire with minute, callous teeth, stellate on the upper surface or glabrescent, densely greenish-yellow-tomentose on the lower surface; pedicels axillary, rufous-tomentose, 8-10 cm. long, bibracteolate near the base; hypanthium broadly depressed-globose; sepals lanceolate, 14-18 mm.

long, 4 mm. wide, acuminate, entire, spreading; corolla (form a) yellow, tomentose, 4 cm. long; filaments exerted, pubescent; anther tube 6 mm. long, sparsely pilose, especially distally.

Libertad: Prov. Pataz, Valley of the Mixiollo, a left branch of the Huallaga, 2,100–2,200 meters, *Weberbauer 7044*, type.

56. *Centropogon scabiosus* E. Wimm. Repert. Sp. Nov. 19: 388. 1924.

Suffrutescent, ferruginous-stellate-pilose and rough; leaves lanceolate, 9–15 cm. long, 2.5–4.5 cm. wide, acuminate, acute at the base, narrowed into a petiole 1 cm. long, regularly callous-dentate, sparsely stellate on the upper surface, densely so on the lower surface, especially on the veins; flowers axillary; pedicels 5–6 cm. long, without bractlets, shorter than the subtending leaves; sepals broadly triangular, entire, acuminate, 2 mm. long; corolla red (?), stellate-pilose, 45 mm. long (form a), the lobes 12–7 mm. long; stamen column glabrous; anthers 8 mm. long.

Amazonas: Prov. Chachapoyas, in the Andes, *Mathews*, type.

57. *Centropogon sciaphilus* A. Zahlbr. Ann. Hofmus. Wien 6: 435. 1891. *C. ciliatus* Gleason, Bull. Torrey Club 52: 58. 1925.

An erect, glabrous herb 30–90 cm. high; leaves obovate-oblong, rarely rather oblong, 15–24 cm. long, 4.7–5.5 cm. wide, abruptly acuminate, cuneate at the base into an indefinite petiole as much as 8 mm. long, sharply and finely denticulate-ciliate with subulate, callous teeth; inflorescence a short raceme, often subcapitate; floral leaves ovate-oblong, 10–18 mm. long, acuminate, sessile, ciliate-denticulate; pedicels 10–30 mm. long; sepals narrowly triangular, 8–10 mm. long, denticulate, suberect; corolla (form a) vermilion or bright red, 3 cm. long, inflated at the throat; filaments yellow, glabrous, not exerted; anther tube green, 7 mm. long, densely hirsute on the 3 dorsal commissures with purplish hairs. Neg. 30966.

Peru: Without locality, in the subandean, gloomy and damp forest, *Poeppig 1651*, type.—Huánuco: Mufia, dense forest, 3,100 meters, 4028 (type of *C. ciliatus*).—Junín: Between Azupizú and Santa Rosa, dense forest, 625 meters, *Killip & Smith 26146*. Puerto Bermúdez, 375 meters, *Killip & Smith 26672, 26581*.

58. *Centropogon silvaticus* E. Wimm. Repert. Sp. Nov. 38: 6. 1935.

An erect, glabrous herb 50 cm. tall; leaves lanceolate, 8–10.5 cm. long, 0.8–1.2 cm. wide, subacuminate, narrowed into a petiole

5-7 mm. long, callous-denticulate; flowers axillary, crowded at the summit, surpassed by the subtending leaves; pedicels 2-3 cm. long; hypanthium semiovoid; sepals connate at the base for 8-10 mm., the free parts triangular, subacuminate, entire, 10 mm. long, at the base 3-4 mm. wide; corolla (form a) blood-red, with white limb, 35 mm. long, inflated at the throat; filaments glabrous; anther tube 6-7 mm. long, pilose on the dorsal portion toward the summit.

Loreto: Balsapuerto, in forest, about 220 meters, *Klug 3062*, type.

59. *Centropogon subandinus* A. Zahlbr. Repert. Sp. Nov. 14: 141. 1915.

Suffrutescent or herbaceous, to 1.3 meters high, glabrous; leaves elliptic-lanceolate, rarely ovate-oblong, 7-15 cm. long, 3-5 cm. wide, acuminate, at the base acutely narrowed into a petiole 2-3 cm. long, finely fimbriate-dentate; flowers axillary; pedicels 8-14 cm. long, bibracteolate at the base; hypanthium short-cylindric, truncate at the base; sepals triangular-linear, 8-10 mm. long, callous-denticulate, erect; corolla bright red with a whitish limb, 42-53 mm. long (form a), on the lower side somewhat ventricose; stamens glabrous, long-exserted; anther tube 10 mm. long, grayish blue.—Spruce described the flower as "sordid purple" and the plant as a "3-pedale, sub-simple herb." Neg. 27242.

Junín: Llalla, in forest, *Spruce 6048*. Pangoa, *Spruce*. Ecuador.

60. *Centropogon subcordatus* A. Zahlbr. Repert. Sp. Nov. 14: 140. 1915.

A shrub with stellate-tomentose, ferruginous branches; leaves with a stout petiole 6-7 mm. long, ovate, 3.5-7 cm. long, 1.8-4 cm. wide, acute, subcordate at the base, rarely rounded or subacute, callous-denticulate, sparsely stellate above, densely tomentose beneath; pedicels axillary, to 8 cm. long, tomentose; sepals triangular, 3 mm. long; corolla (form a) brick-red, ferruginous-tomentose, 34 mm. long; filaments pubescent; anther tube violet-blue, glabrous or with a few hairs distally.

Huánuco: Huánuco, 2125 (det. Gleason). Ecuador; Colombia.

61. *Centropogon Tessmannii* E. Wimm. Repert. Sp. Nov. 26: 8. 1929.

An herb 20-30 cm. high, sparsely villous, with creeping root; petiole 8-35 mm. long; leaf blades ovate-elliptic, 12 cm. long, 6 cm. wide, acute, rotund or acute at the base, doubly repand-dentate

to denticulate, thin, sparsely villous above, more densely so beneath, especially on the veins; flowers axillary; pedicels 22–27 mm. long, subvillous; hypanthium turbinate; sepals subulate, spreading, 5 mm. long; corolla crimson, subvillous, 6 cm. long, its tube 5 cm. long, narrowed in the lower portion, 4 mm. wide when pressed, in the upper portion gradually expanded to 10 mm., at the throat again somewhat narrowed, the lobes triangular and subfalcate, 10–5 mm. long, 4 mm. wide; filaments glabrous, included; anther tube 8 mm. long, pilose distally with lilac hairs. Neg. 9093.

Loreto: Rain forest at the mouth of Río Santiago, 160 meters, *Tessmann 4249*, type. Right bank of Río Santiago, *Meria 6229*.

61a. *Centropogon Tessmannii* var. *tenuiflorus* E. Wimm. Repert. Sp. Nov. 29: 69. 1931.

Leaves elliptic, rarely subovate; pedicels 2.5–3 cm. long; flowers smaller and more slender; sepals 3 mm. long; corolla 43 mm. long, at the constricted part 2 mm., toward the summit 8 mm. wide, the lobes only 5 mm. long.

Peru: In damp forest on Río Bombonasa, *Spruce 4961*, type.

62. *Centropogon umbrosus* E. Wimm. Repert. Sp. Nov. 19: 250. 1924.

Suffrutescent, scarcely branched, 1 meter high, pilose; petiole 10–15 mm. long; leaf blades elliptic, 13–18 cm. long, 5–8 cm. wide, acuminate, acute to acuminate at the base, callous-denticulate, pilose; flowers in a dense, terminal corymb; bracts sublinear, acute, 12–24 mm. long; pedicels 4–5 cm. long, bibracteolate near the base; sepals triangular, acute, suberect, 3 mm. long; corolla (form a) purple, puberulent, 25 mm. long, falcate, the lobes 6–4 mm. long; filaments puberulent; anther tube rather glabrous or with a few hairs toward the summit.

Ayacucho: Prov. Huanta, road from Tambo via Osno to the Río Apurímac, 2,600–2,700 meters, *Weberbauer 5616*, type.

63. *Centropogon urubambae* E. Wimm. Repert. Sp. Nov. 38: 7. 1935.

A glabrous shrub with climbing, slender, pendent branches; leaves oblong, 4.5 cm. long, 1.5 cm. wide, acute, narrowed to a petiole 1 cm. long, flat-crenate, interspersed with callous teeth; inflorescence racemose, lax, long; bracts lanceolate, petioled; pedicels 3 cm. long; hypanthium depressed-globose, 7 mm. in diameter; sepals linear, 6–7 mm. long, divaricate and toward the apex again

ascending; corolla crimson, 33 mm. long (form a); filaments glabrous; anther tube 7 mm. long, lilac-pilose in the fissures.

Junín: Colonia Perené, 680 meters, *Killip & Smith 25048*. La Merced, thickets, 700 meters, *Killip & Smith 23762*. Pichis Trail, 1,350–1,600 meters, *Killip & Smith 25474*.—Cuzco: Urubamba Valley, San Miguel, mountain Nucja, 1,800 meters, *Cook & Gilbert 942*. Urubamba Valley, 2,050 meters, *Herrera 2682b*.

63a. *Centropogon urubambae* var. *estrellanus* E. Wimm. Repert. Sp. Nov. 38: 8. 1935.

Leaves broadly elliptic, 10 cm. long, 7 cm. wide, rounded at the apex, at the base broadly cuneate to a petiole 15–20 mm. long; pedicels 10–15 mm. long; corolla somewhat smaller.

Ayacucho: Estrella, between Huanta and Río Apurímac, dense forest, 500 meters, *Killip & Smith 22643*, type.

64. *Centropogon verbascifolius* (Presl) Gleason, Bull. Torrey Club 52: 18. 1825. *Lobelia verbascifolia* Presl, Prodr. Monogr. Lobel. 38. 1836. *Siphocampylus verbascifolius* A. DC. in DC. Prodr. 7: 402. 1839. *C. cinereus* Gleason, op. cit. 15. *C. cinereus* f. *odontosepalus* E. Wimm. Repert. Sp. Nov. 29: 75. 1931.

A shrub 2 meters high, cinereous-ochreous-tomentose; petiole stout, 15–30 mm. long; leaf blades elliptic to ovate-elliptic, 10–15 cm. long, 5–7 cm. wide, short-acuminate, broadly cuneate to subrounded at the base, callous-denticulate, sparsely stellate-pilose above, stellate-tomentulose on the surface, tomentose on the veins beneath; pedicels from the upper axils, 2–5 cm. long, bibracteolate at the base; hypanthium broadly hemispheric; sepals linear, 7–9 mm. long, denticulate, suberect; corolla (form a) brick-red, with yellow limb, tomentulose, 35–40 mm. long; filaments thinly pubescent; anther tube 8 mm. long, pilose on the fissures distally.

Peru: Without data, *Herb. Presl*, type.—Junín: Carapata, above Huacapistana, edge of forest, 2,700–3,500 meters, *Killip & Smith 24376*. Prov. Tarma, mountains west of Huacapistana, among bushes, 2,500–2,600 meters, *Weberbauer 2184*. Valle de Vitoc, *Isern 2566*. Colombia.

65. *Centropogon vernicosus* A. Zahlbr. Ann. Hofmus. Wien 6: 440. 1891.

Suffrutescent, pilose above; leaves oblong-elliptic, 12–15 cm. long, 5–7 cm. wide, acuminate at both ends and at the base narrowed into a petiole 10–12 mm. long, glabrous, glossy on the upper surface,

paler and pubescent on the lower surface; flowers in an elongate raceme; rachis of the inflorescence ferruginous-pilose; bracts subsessile, lanceolate, pubescent, 20–30 mm. long, 4–6 mm. wide; pedicels about 2 cm. long, bibracteolate at the base; hypanthium broadly hemispheric; sepals linear, 15–17 mm. long, denticulate, suberect; corolla (form a) red(?), pubescent, 35 mm. long, subcurved; filament column glabrous; anther tube densely hirsute. Neg. 30970.

Huánuco: Tambillo, *Jelski* 78, type.

66. *Centropogon viriduliflorus* E. Wimm. Repert. Sp. Nov. 38: 16. 1935.

A shrub to 4 meters tall, ferruginous-stellate-tomentose; leaves linear-lanceolate, 13 cm. long, 2 cm. wide, acuminate, at the base subobtusate, the petiole 2–5 mm. long, the margin callous-denticulate, glabrous above, tomentose beneath; flowers axillary; pedicels 11–13 cm. long, floccose-tomentose, with 2 linear bractlets below the middle, 13 mm. long; hypanthium urceolate-cylindric, 15 mm. long, 10 mm. wide; sepals linear, acute, 27–32 mm. long, 2 mm. wide, callous-denticulate, at first spreading, afterward reflexed; corolla (form b) greenish, 52 mm. long, 10 mm. wide, the lobes longer than the (20 mm. long) tube, sublinear, falcate, 38–27 mm. long, 3–4 mm. wide; filaments pubescent; anther tube 10 mm. long, densely brownish-pilose.

Cuzco: Marcapata, 3,300 meters, *Weberbauer* 7795, type.

67. *Centropogon Weberbaueri* A. Zahlbr. Bot. Jahrb. 37: 453. 1906.

A shrub to 2 meters high, densely ferruginous-tomentose; leaves lanceolate, 7–12 cm. long, 2–3 cm. wide, acuminate, callous-denticulate, acute to obtuse at the base, sparsely stellate above, ochreous-pilose beneath; flowers axillary; pedicels 5–12 cm. long; sepals linear-lanceolate, 15 mm. long, at the middle 3 mm. wide, slightly narrowed to the base, divaricate, denticulate near the tip; corolla (form a) brick-red(?), tomentose, 35–40 mm. long; filaments puberulent; anther tube 8 mm. long, pilose in the fissures.

Huánuco: Prov. Huamálies, mountains southwest of Monzón, 3,400–3,500 meters, *Weberbauer* 3247, type.

68. *Centropogon*(?) *Weddellii* E. Wimm. Repert. Sp. Nov. 26: 11. pl. 71, f. 9. 1929.

Apparently a shrub 1–2 meters high, brown-pilose; petiole stout, 1 cm. long; leaves ovate, 5 cm. long, 3–3.5 cm. wide, subacute,

truncate to subrounded at the base, the margin revolute and glandular-denticulate, on the upper surface wrinkled, glossy, glabrous, on the lower surface reticulate and densely pilose; flowers axillary; pedicels 4 cm. long, bibracteolate at the base; hypanthium broadly turbinate; sepals sublinear, obtuse, suberect to spreading, sub-denticulate, 6 mm. long; corolla greenish, with purplish hairs, within pale and glabrous, its tube 8 mm. long, at the middle somewhat narrowed, the lobes triangular-linear, 10-6 mm. long; filament column glabrous; anther tube 6 mm. long, black-cinereous and brown-striate, glabrous, somewhat pilose distally; 2 lower anthers with fulvous, villous hairs at the apex.—Perhaps this is rather a species of *Burmeistera*.

Puno: Prov. Carabaya, in the mountains near Quiaca, *Weddell 4646*, type.

69. *Centropogon yungasensis* Britton, Bull. Torrey Club 19: 371. 1892.

A climbing shrub, often with pendent branches; leaves glabrous, oblong to elliptic, 9-11 cm. long, 3.7-5.5 cm. wide, subacuminate with an obtuse apex, obtuse or subrounded at the base, with a short, marginate petiole, flat-crenate or slightly repand-denticulate; flowers in a short or elongating raceme; bracts small, elliptic or minute; pedicels 2-4 cm. long; hypanthium hemispheric; sepals linear, obtuse, spreading to reflexed, 6-8 mm. long; corolla scarlet-red (distally yellowish?), scabrellate or glabrous, 35 mm. long, falcate (form a); filaments glabrous; anther tube 7 mm. long, with purplish hairs in the fissures or glabrate.

Lima: Quebradas de San Mateo, *Isern 2555*.—Cuzco: Pillahuata, Cerro de Cusilluyoc, swampy place in forest, 2,100-2,300 meters, *Pennell 13957*. Río Yanamayo, in forest, 2,000-2,300 meters, *Pennell 14055*. Bolivia.

69a. *Centropogon yungasensis* var. *angustior* A. Zahlbr. Bot. Jahrb. 37: 452. 1906.

Leaves oblong-lanceolate, 7.5-10.5 cm. long, 2.6-3.5 cm. wide, acuminate, acute to obtuse at the base, flat-crenate; raceme elongate; bracts ovate-oblong, with short petioles, 2 cm. long, 1 cm. wide; pedicels 15-20 mm. long, puberulent; sepals linear-lanceolate, denticulate, spreading, 8-11 mm. long; corolla 3 cm. long, puberulent.

Junín: Mountains of Yanangu, east of Huacapistana, open forest, 2,100-2,200 meters, *Weberbauer 2131*.

2. Lobelioideae-Capsuliferae

LOBELINAE

Corolla tube entire (*Eusiphon*) or longitudinally split on the upper side to the base (*Schizosiphon*). Ovary 2-celled, with a central placenta. Capsule loculicidally dehiscent at the apex by 2 valves.

7. SIPHOCAMPYLUS Pohl

Erect or climbing shrubs, suffrutescent plants, or coarse herbs. Leaves alternate, rarely verticillate, mostly undivided, petiolate. Flowers solitary in the axils of leaves or bracts, often arranged in terminal racemes or corymbs, very rarely in lateral, umbelliform racemes, pedicellate. Calyx mostly turbinate or hemispheric, with 5 distinct lobes. Corolla showy, 2–7 cm. long, occurring in 4 forms: (a) the entire tube slender, curved or straight, above the base more or less constricted, then gradually subventricose or funnel-shaped to the limb, the filaments inserted in the corolla above the base, the corolla lobes 3–5 times shorter than the tube; (b) the corolla tube comparatively stout and nearly equally wide from the base to the subinflated throat, the filaments often adnate to the corolla, the corolla lobes as long as or somewhat longer than the corolla tube; (c) tube as described previously, but the lowest corolla lobe separated to the middle or nearly to the base of the tube and more or less pendent, the filaments somewhat adnate to the corolla; (d) the corolla tube short and attenuate below the inflated limb, the filaments free from the corolla, the corolla lobes somewhat longer than the tube. Filaments distinct below, connate upward into a narrow, exserted column. Anther tube cylindric, slightly curved, the 2 lower anthers somewhat shorter and pilose-penicillate at the tip. Style 1, with a 2-lobed stigma. Fruit a bilocular, many-seeded capsule, dehiscent at the apex by 2 valves. Seeds globose to ellipsoid, mostly brown, shining, 0.5–1 mm. long.

Siphocampylus grows chiefly on the higher mountains, especially in the Andes of Colombia, Ecuador, and Peru. Besides, it is distributed on the West Indian Islands and from Costa Rica and Venezuela to Bolivia and Argentina. There are at present known 240 species, of which 85 are found in Peru and the contiguous districts. Several of them are used as ornamental plants. Fertilization is accomplished chiefly by humming-birds.

Leaves and flowers verticillate.....1. *Verticillati*.
Leaves alternate.

Inflorescence a short or elongate raceme.

Inflorescence a lateral, umbelliform raceme.....2. *Ectropici*.

Inflorescence terminal.

Flowers forming a short, umbelliform raceme.3. *Corymboides*.

Flowers forming an elongate raceme.

Flowers in the axils of small bracts...4. *Bracteato-racemosi*.

Flowers in the axils of leaves (leafy raceme).

5. *Foliato-racemosi*.

Flowers solitary in the axils of the upper leaves, often crowded or corymbose at the summit.

Corolla form a; corolla tube 3-5 times longer than the lobes.

6. *Dissitiflori*.

Corolla form b-d; corolla tube as long as or shorter than the corolla lobes.

Lowest corolla lobe very deeply separated; corolla form c.

7. *Altofissi*.

Corolla lobes almost equally deeply separated from the corolla.

Anther tube comparatively long (anthers 10-15 mm. long; filaments 20-25 mm. long), the 2 lower anthers without beard (at most with a few short hairs) . .8. *Megalandri*.

Anther tube mostly stout (anthers 10-15 mm. long; filaments 30-48 mm. long), often densely hirsute, the 2 lower anthers barbate.....9. *Megastomi*.

1. *Verticillati*

Leaves oblong to elliptic, acuminate; sepals linear, 12-15 mm. long.

53. *S. Orbignianus*.

2. *Ectropici*

Leaves oblong, acute; sepals 3-5 mm. long.....51. *S. oblongifolius*.

Leaves oblong, acuminate; sepals 10 mm. long . .48. *S. membranaceus*.

3. *Corymboides*

Leaves ovate to oblong-ovate, subacuminate, cordate or rounded at the base; few flowers often in the uppermost leaf axils or the raceme elongating.....40. *S. igneus*.

4. *Bracteato-racemosi*.

Climbing shrubs with pendent branches. Flowers in the axils of the small bracts, secund; pedicels mostly 1-2 cm. long (only *S. calodontus* with pedicels 4-6 cm. long).

- A. Corolla tube 7–10 mm. long, narrow (3–5 mm.), shorter than the corolla lobes, which are linear and 20–25 mm. long.

Plants ferruginous-stellate-tomentose; leaves oblong, subcordate at the base.....43. *S. loxensis*.

Plants simple-hairy or nearly glabrate.

Leaves ovate, rounded at both ends; raceme often leafy.

30. *S. fissus*.

Leaves oblong, ovate-oblong, or obovate-oblong.

Leaves glossy; anthers glabrous.....59. *S. Pavonis*.

Leaves dull; anthers pilose in the fissures..36. *S. floribundus*.

Plants glabrous.

Leaves broadly ovate to elliptic, 3 cm. long, 2 cm. wide, membranaceous; bracts elliptic, long-petiolate.69. *S. secundus*.

Leaves ovate-oblong, 8 cm. long, 3 cm. wide, obtuse, coriaceous, glossy; bracts oblong to lanceolate.....54. *S. ovatus*.

Leaves elliptic to ovate-elliptic, 6 cm. long, 3 cm. wide, sub-acuminate, coriaceous, dull; bracts subulate.

17. *S. chloroleucus*.

- A. Corolla tube 30–40 mm. long, 3–5 times longer than the (10–15 mm. long) lobes.

Sepals reflexed, 6–7 mm. long.

Plant glabrous.....15. *S. calodontus*.

Plant pubescent.....18. *S. tortuosus*.

Sepals erect, rarely subrecurved at the tip.

Plants glabrous; sepals dentiform.

Leaves acuminate; raceme sometimes leafy below.

4. *S. angustiflorus*.

Leaves obtuse to rounded at the apex, rarely acute.

Leaves broadly elliptic to obovate-rounded.. *S. carnosus*.

Leaves oblong, ovate-oblong, or elliptic-oblong.

Bracts linear-lanceolate, sessile, shorter than the pedicels.

69. *S. scandens*.

Bracts oblong to elliptic, petiolate, often longer than the pedicels.....27. *S. divaricatus*.

Plants scabrellate-puberulent or pubescent.

Sepals dentiform; leaves ovate-oblong to elliptic, short-acuminate.....31. *S. flagelliformis*.

Sepals linear, (4) 7–10 mm. long.

Leaves remotely denticulate; corolla 40–49 mm. long.

Plants pubescent; sepals 7 mm. long. 14 *S. Buesii*.

Plant scabrellate-puberulent; sepals 4 mm. long.

60. *S. penduliflorus* var. *asperatulus*.

Leaves densely denticulate; corolla 6 cm. long.

63. *S. pozuzensis*.

5. *Foliato-racemosi*.

Stout, erect herbs 60–150 cm. high, mostly rather densely leafy, with racemes 20–50 cm. long, that are wholly leafy or upward the leaves reduced to foliaceous bracts. Petioles very short or none. Anther tube pilose at the base.

Leaves ovate to ovate-oblong, acute, serrate-dentate.

12. *S. biserratus*.

Leaves triangular-oblong, subacute, callous-denticulate.

81. *S. venustus*.

Anther tube glabrous (except the terminal tuft of the lower anthers).

Leaves broadly ovate, cordate at the base. 5. *S. apricus*.

Leaves triangular-elongate or ovate-oblong, rounded or truncate at the base.

Sepals linear, entire, 5 mm. long. 44. *S. macropodioides*.

Sepals triangular or triangular-linear, callous-denticulate; leaves acute at the apex. 79. *S. tupaeformis*.

Leaves ovate-linear, oblong-linear, or linear.

Sepals triangular, callous-denticulate; leaves ovate-linear, the upper leaves nearly linear, acute. 20. *S. Coltinya*.

Sepals triangular, entire.

Leaves narrow-oblong, obtuse, mucronate or acute at the tip, tomentulose beneath. 33. *S. foliosus* var. *subcanus*.

Leaves ovate-linear to linear, 14 cm. long, 1.3 cm. wide, cuspidate at the apex, rounded at the base, sessile.

79. *S. tupaeformis* var. *stenophyllus*.

Leaves oblong, 7 cm. long, 2 cm. wide, acute, obtuse at the base, strongly reticulate and tomentulose beneath.

41. *S. Krauseanus*.

6. *Dissitiflori*.

A majority of the species belong to this group. The axillary flowers are more or less remote from one another, or congested,

mostly long-pedicellate, but often shorter than the subtending leaves.

A. Hypanthium depressed-globose or hemispheric, rounded at the base, mostly broader than long.

Leaves ovate-subcordate to broadly rounded at the base.

Leaf tip rounded, mucronate.....5. *S. apricus*.

Leaf tip acuminate.....44. *S. macropodioides*.

Leaves subrotund to acute at the base.

Leaves ovate-oblong or ovate-lanceolate.

Filaments pubescent; corolla 45 mm. long.13. *S. boliviensis*.

Filaments glabrous; corolla 25-35 mm. long.64. *S. puberulus*.

Leaves elliptic, oblong, oblong-linear, or lanceolate.

Sepals linear, 15-20 mm. long; stamens white-villous.

68. *S. sanguineus*.

Sepals 3-10 mm. long; stamens glabrous.

Lower surface of the leaves strongly reticulate and more or less arachnoid.

Lower leaf surface white-arachnoid.....6. *S. arachnes*.

Lower leaf surface scarcely arachnoid.

Leaves oblong, 7-8 cm. long, 2 cm. wide; sepals denticulate.....67. *S. salviifolius*.

Leaves oblong to ovate-elliptic; sepals entire.

62. *S. phaeton*.

Lower surface of the leaves sparsely or densely pubescent.

Pedicels 7-8 cm. long; leaves sparsely pubescent.

72. *S. sparsipilus*.

Pedicels 1-4 cm. long; leaves densely pubescent beneath.

Corolla tube abruptly and strongly curved.

28. *S. Dossennus*.

Corolla tube nearly straight.

Leaves elliptic-oblong, 8 cm. long, 2.7 cm. wide; corolla lemon-yellow.....18. *S. citrinus*.

Leaves narrow-oblong, 8 cm. long, 1.3 cm. wide.

45. *S. macrostemon*.

A. Hypanthium almost none (at first short, broadly turbinate or short-hemispheric and much broader than long).

Leaves oblong-ovate, acuminate, subcordate to rounded at the base, scarcely stellate-pubescent.....74. *S. stenolobus*.

Leaves ovate-lanceolate or subovate-linear.

Sepals triangular, spreading.

Sepals entire.

Corolla 5 cm. long; leaves ovate-lanceolate, subacute.

3. *S. andinus*.

Corolla 6 cm. long; leaves triangular-oblong, acute.

3. *S. andinus* var. *elegantissimus*.

Sepals with few teeth; corolla 7 cm. long.

3. *S. andinus* var. *solemnis*.

Sepals linear-lanceolate or triangular-linear, denticulate or subentire, spreading to reflexed.

Sepals linear-lanceolate, subobtusate, at least reflexed, 2 cm. long.....71. *S. soraticus*.

Sepals sublinear, acute.

Leaves lance-linear, somewhat broader in the lower portion.

71. *S. soraticus* var. *angustus*.

Leaves ovate-lanceolate.....19. *S. Clotho*.

A. Hypanthium turbinate or obconic, acute at the base.

B. Leaves narrowed at the base.

C. Leaves lanceolate to linear.

Leaves linear.

Leaves white-tomentose beneath....65. *S. rosmarinifolius*.

Leaves very narrow, quite glabrous.....40. *S. nobilis*.

Leaves lanceolate, acute at both ends.

Sepals with 1 to 3 teeth on each side.

Leaves glabrous.....85. *S. Williamsii*.

Leaves with dense pubescent warts.....29. *S. Elfriedi*.

Sepals entire.

Leaves linear-lanceolate, 20-25 mm. long, 3.5 mm. wide, granular-roughened beneath....73. *S. Spruceanus*.

Leaves lanceolate, somewhat obovate, 20 mm. long, 5 mm. wide, subacute, cuneate at the base, glabrous, glossy; sepals 3-4 mm. long.....57. *S. parvifolius*.

Leaves lanceolate to ovate-lanceolate, acute at both ends. 7 cm. long, 1 cm. wide; sepals 5-6 mm. long.

21. *S. comosus*.

Leaves lance-oblong or oblong (9 cm. long, 2-3 cm. wide).

Leaves glabrous, ovate-lanceolate, cuspidate.

Sepals dentiform, 1 mm. long..... 58. *S. parvilobus*.

Sepals subulate, 3 mm. long, recurved at the tip.

61. *S. peruvianus*.

Sepals narrow-triangular, 7 mm. long, erect; corolla 35 mm.
long..... 8. *S. attenuatus*.

Leaves pubescent or arachnoid on the lower surface.

Sepals subulate, entire, 5 mm. long; leaves pubescent
beneath..... 55. *S. pallidus*.

Sepals sublinear, subdenticulate, 12–16 mm. long.

Pedicels very long, 13–15 mm..... 82. *S. versicolor*.

Pedicels 5–9 cm. long.

Leaves lance-oblong, acute at both ends, 9 cm. long,
2.3 cm. wide; lower surface of the leaves and calyx
arachnoid-tomentose..... 10. *S. bichromatus*.

Leaves oblong, sometimes subovate-oblong, subacute,
9 cm. long, 3.2 cm. wide; lower leaf surface very
thinly arachnoid..... 62. *S. phaeton*.

C. Leaves ovate or elliptic.

Plants ferruginous-tomentulose or -pubescent; leaves ovate
or oblong-ovate, acute, 3 cm. long, 2 cm. wide.

22. *S. correooides*.

Plants scarcely pubescent.

Leaves elliptic, subacute, subrounded at the base, on the
upper surface rugose and lustrous... 36. *S. heliades*.

Leaves elliptic, mostly broader below the middle, short-
acuminate, acute or subrounded at the base, on the
upper surface plane and dull..... 34. *S. Goebelii*.

B. Leaves rounded or cordate at the base; all leaves of an ovate type.

Leaves small, broadly ovate, 12–20 mm. long, 9–14 mm. wide,
subacute; corolla 6 cm. long..... 42. *S. Lobbi*.

Leaves much larger (except sometimes the uppermost floral
leaves).

Sepals subulate, 2–5 mm. long.

Leaves callous-denticulate; corolla 58 mm. long.

37. *S. Helmuti*.

Leaves sinuate-dentate; corolla 35–45 mm. long.

16. *S. Candollei*.

Sepals triangular, triangular-lanceolate, or linear, 6-23 mm. long.

Leaves ovate-lanceolate, subacute, remotely denticulate.

3. *S. andinus*.

Leaves oblong-ovate or ovate, rarely elliptic, at the base often subcordate.

Sepals triangular.

Corolla 6 cm. long; sepals 12-16 mm. long, spreading.

3. *S. andinus* var. *solemnis*.

Corolla 5 cm. long; sepals 6-7 mm. long, erect.

38. *S. Humboldtianus*.

Sepals narrow-linear, 7-23 mm. long, 1-2 mm. broad.

Plants glabrous; leaves subcoriaceous, glossy.

76. *S. subcordatus* var. *dives*.

Plants puberulent or tomentose, at least on the lower leaf surface.

Anther tube pilose in the fissures.

Leaves more or less puberulent on the lower leaf surface.

Sepals 9-12 mm. long.

Leaf tip obtuse.....76. *S. subcordatus*.

Leaf tip gradually acuminate..7. *S. argutus*.

Sepals 16-19 mm. long.....11. *S. bilabiatus*.

Leaves tomentose on the lower surface.

Pedicels 9-10 cm. long, with 2 bractlets at the base; tomentum gray.....52. *S. onagrius*.

Pedicels 5-7 cm. long, without bractlets; tomentum brown.....26. *S. dependens*.

Anther tube glabrous.

Plants tomentulose, except the upper leaf surface.

Corolla 46 mm. long; tomentum gray.

26. *S. dependens* var. *undulatus*.

Corolla over 6 cm. long; tomentum lurid-yellowish.

Plants with scattered pubescence.

Sepals 15-20 mm. long, spreading to reflexed.

74. *S. stenolobus*.

Sepals 7-10 mm. long, suberect.

9. *S. aur/oocinctus*.

7. *Altofissi*

Shrubs 1-2 meters high with corymbiform inflorescences and long-pedicellate flowers. The corolla is striking from the deep separation of the lowest corolla lobe, which is commonly separated nearly to the base; in only 2 cases is it separated only to the middle of the corolla. The filaments are inserted in the corolla tube above the base.

Lowest corolla lobe separated from the corolla at the middle of the latter.

Leaves ovate-oblong, subcordate to rounded at the base.

56. *S. palilloanus*.

Leaves lanceolate, acute at the base.....1. *S. actinothrix*.

Lowest corolla lobe separated nearly to the base of the corolla.

Leaves linear-lanceolate.....23. *S. corynellus*.

Leaves obovate-oblong to elliptic-oblong.

Sepals ovate, 2 mm. long; leaves densely short-pilose beneath.

50. *S. obovatus*.

Sepals triangular to linear, 3-7 mm. long; leaves arachnoid-tomentulose beneath.....24. *S. corynoides*.

8. *Megalandri*

Suffrutescent plants or shrubs, 1.5-3 meters high, with corymbiform inflorescences, long-pedicellate flowers, and greenish white, reddish-tinged corollas. The corolla recalls *Burmeistera* in having a similar shape, also the terminal tufts of hairs are absent from the 2 lower anthers and the filaments are not inserted in the corolla.

Sepals triangular, acuminate, entire, 3 mm. long...25. *S. cutervensis*.

Sepals sublinear, denticulate, 10-17 mm. long.

Pedicels without bractlets; leaves gray-yellowish-pubescent on the lower surface.....46. *S. Matthiaei*.

Pedicels bibracteolate at the base; leaves whitish-tomentose beneath.....84. *S. Weberbaueri*.

9. *Megastomi*

Branched shrubs 1-4 meters high, with corymbose, long-pedicellate flowers. The tube of the corolla is straight and nearly equally wide or somewhat dilated to the throat. The filaments are mostly free from the corolla. The corolla lobes are as long as or longer than the corolla tube.

Anther tube glabrous or nearly so.

Leaves lanceolate to lance-oblong, glabrous, somewhat scabrous.

83. *S. veteranus*.

Leaves oblong to ovate-oblong, glutinous-pubescent beneath.

80. *S. Valkeanus*.

Leaves ovate, acute to acuminate, subcordate to rounded at the base, scarcely puberulent on the veins beneath; anther tube distally sparsely pubescent, at the tip scarcely pilose.

66. *S. Rusbyanus*.

Anther tube densely hirsute, 12-15 mm. long, 5-7 mm. wide.

Leaves sublinear to lanceolate, dense.

Leaves sessile, sublinear, 11-13 cm. long, 0.6-0.8 cm. wide.

39. *S. Jelskii*.

Leaves petiolate, linear-lanceolate, 16-18 cm. long, 1.3-2 cm. wide.....

39. *S. superbus*.

Leaves oblong to elliptic, not dense.

Pedicels without bractlets; filaments glabrous; leaves elliptic to oblong, yellowish-pubescent beneath.....

2. *S. albus*.

Pedicels with 2 bractlets above the base; filaments pubescent; leaves lance-oblong or oblong, ochreous-tomentulose beneath.....

47. *S. megastoma*.

1. *Siphocampylus actinotrix* E. Wimm. Repert. Sp. Nov. 19: 253. 1924.

A rough, branched shrub; leaves lanceolate, 11-13.5 cm. long, 2.5-3 cm. wide, acuminate, acute at the base, unequally denticulate, rough above, beneath, especially on the veins, with short-pilose warts; petiole stout, 4-10 mm. long; flowers in the axils of the upper leaves; pedicels 12-15 cm. long, with 2 bractlets above the base; calyx lobes narrowly triangular, denticulate, spreading, 7 mm. long; corolla dorsally red, ventrally yellowish, densely covered with hairy warts, 36 mm. long, the 4 upper lobes 1 cm. long, the lowest lobe nearly 2 cm. long because it is deeply separated; anther tube 8 mm. long, villous at the apex.

Cuzco: Piñasniocj, Panticalla Pass, Llancu, 3,600 meters, Cook & Gilbert 1821, type. Valle del Urubamba, Ollantaitambo, 2,500 meters, Herrera 3576.

2. *Siphocampylus albus* E. Wimm. Repert. Sp. Nov. 26: 17. 1929.

A shrub 4 meters high, gray-yellowish-pubescent; leaves elliptic to oblong, 12–14 cm. long, 4–5.5 cm. wide, acuminate, callous-denticulate, acute at the base, the narrowly winged petiole 1 cm. long, glabrescent and glossy above, pubescent beneath, especially on the veins; flowers axillary, crowded at the summit; pedicels 11–12 cm. long, pubescent; hypanthium hemispheric, 13 mm. in diameter when pressed; sepals narrow-triangular, 18–20 mm. long, denticulate, pubescent, suberect; corolla white, almost equally wide, 37 mm. long, at the throat 12–15 mm. wide, pubescent, the lobes 16–22 mm. long; filaments glabrous, adnate to the base of the corolla; anther tube 13 mm. long, 4 mm. wide, densely yellowish-pilose on the upper half.

Piura: Near Ayavaca, among bushes along the river, 2,700–2,800 meters, *Weberbauer 6383*, type.

3. *Siphocampylus andinus* Britton, Bull. Torrey Club 19: 373. 1892.

A shrub with slender, climbing branches; petiole tortuous, 5–6 mm. long; leaves ovate-lanceolate, 4–8 cm. long, 1–2 cm. wide, acute, remotely denticulate, rounded at the base, glossy, on the veins beneath inconspicuously puberulent; pedicels axillary, 3 cm. long; hypanthium very short or none; sepals ovate-lanceolate, sub-acute, entire, spreading, 10–13 mm. long, 4–5 mm. wide at the base; corolla crimson, puberulent, 5 cm. long; filaments pubescent; anther tube glabrous.

Peru: Probably occurring. Bolivia (Unduavi, *Rusby 941*, type).

3a. *Siphocampylus andinus* var. *elegantissimus* E. Wimm. Repert. Sp. Nov. 38: 22. 1935.

A shrub 3–4 meters high, climbing; leaves ovate-triangular, gradually acute, broader, 5 cm. long, 2.5 cm. wide; pedicels 4–5 cm. long; corolla 6 cm. long, at the throat 1 cm. wide; filaments glabrous; anther tube 9 mm. long, on the back scarcely pubescent.

Peru: Not yet collected. Bolivia (La Paz, *Buchtien 97, 98*).

3b. *Siphocampylus andinus* var. *solemnis* E. Wimm. Repert. Sp. Nov. 38: 23. 1935.

Leaves ovate-lanceolate, gradually acute-cuspidate, 5 cm. long, 1.3 cm. wide; pedicels 3–4 cm. long; sepals 13–15 mm. long, 6 mm. wide at the base, subdenticulate; corolla 7 cm. long; filaments glabrous; anther tube scarcely pubescent on the back.

Peru: Probably. Bolivia (*Bang 2491*).

4. *Siphocampylus angustiflorus* Schlecht. in Lechler, Berberid. Amer. Austr. 58. 1857 (nomen); ex Zahlbr. Bull. Torrey Club 24: 379. 1897.

A shrub to 2 meters high with pendent, slender, striate, granular-scabrous branches; leaves short-petiolate, ovate-oblong, 4-5.7 cm. long, 1.7-2.2 cm. wide, mostly acuminate and falcate, rounded at the base, remotely callous-denticulate, often conduplicate, glabrous, glossy; flowers in terminal, bracteate or (below) leafy racemes; pedicels scabrous, 10-15 mm. long; hypanthium turbinate, with 5 dentiform lobes 1 mm. long; corolla purple to rose-colored, glabrous, 33 mm. long, the lobes sublinear, 10-15 mm. long; filaments glabrous, 3 cm. long; anther tube greenish, 5 mm. long, all the anthers pilose at the apex, but the 2 lower longer ones hirsute. Neg. 30996.

Amazonas: East of Chachapoyas, between Tambo Almirante and Bagazán, 2,700 meters, *Weberbauer 4433*.—Cajamarca: Santa Cruz, 2,100-2,400 meters, and Callayuc, in woods, 2,400 meters, *Pearce*.—Huánuco: Mountains southwest of Monzón, 2,500-2,900 meters, *Weberbauer 3391*. Playapampa, 2,700 meters, *4877*.—Puno: Between Tambo Ichubamba and Tambo Yuncacoya, road from Sandía to Chunchosmayo, 1,800-2,600 meters, *Weberbauer 1102*.—Without locality, *Lechler 2649*, type. Bolivia.

5. *Siphocampylus apricus* E. Wimm. Repert. Sp. Nov. 22: 206. 1926.

A suffrutescent plant; leaves elliptic-ovate, 5-6 cm. long, 3.7 cm. wide, cordate at the base, at the apex rounded and very short-acuminate, the margin undulate and erose-denticulate, glabrous and rugose above, puberulent beneath; flowers axillary, mostly forming terminal and lateral, leafy racemes; pedicels 28 mm. long, puberulent, bibracteolate above the base; hypanthium hemispheric, with 5 triangular, denticulate, puberulent, erect lobes 4-5 mm. long; corolla yellow and red, puberulent, 32 mm. long, the lobes sublinear, 10-8 mm. long; filaments glabrous, 3 cm. long; anther tube 7 mm. long, straw-colored.

Puno: On sunny slopes, hedges, and walls near Lake Titicaca, *Seler 135* p. p., type.

6. *Siphocampylus arachnes* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 743. 1929.

A suffrutescent plant with glabrous, pithy branches; petiole 1 cm. long; leaves oblong, 9 cm. long, 2.6-3 cm. wide, subacute, acute at the base, the margin revolute and callous-denticulate,

rugose, glabrous, glossy above, reticulate and white-arachnoid-tomentose beneath; flowers axillary, crowded at the summit, the floral leaves mostly lanceolate; pedicels 4 cm. long, floccose, bibracteolate at the base; hypanthium depressed-globose; sepals sublinear, 10–12 mm. long, denticulate, erect, arachnoid; corolla red, glabrous, 44 mm. long, the lobes sublinear, about 12 mm. long; filaments glabrous; anther tube 7 mm. long.

Junín: Chanchamayo, between Chontatamba and Marainioc, *Raimondi* 2667, type.

7. *Siphocampylus argutus* A. Zahlbr. Bull. Torrey Club 24: 383. 1897.

A suffrutescent, climbing plant with slender, glabrous, pendent branches; leaves ovate to ovate-oblong, 10 cm. long, 4 cm. wide, gradually acuminate, cordate at the base, unequally sharp-denticulate, dull and very minutely puberulent on the upper surface, more so along the midvein above, glossy and glabrous beneath; pedicels 17–19 mm. long, puberulent; hypanthium campanulate-turbinate; sepals subulate, 8–10 mm. long, 1 mm. wide, entire, puberulent, at last recurved; corolla crimson, puberulent, about 46 mm. long; filaments pubescent; anther tube white-pilose along the commissures.

Peru: Probably. Bolivia (Yungas, *Bang* 2045, type).

8. *Siphocampylus attenuatus* (Presl) A. DC. in DC. Prodr. 7: 398. 1839. *Lobelia attenuata* Presl, Prodr. Monogr. Lobel. 34. 1836.

Branches glabrous, olive-green, pithy; petiole about 8 mm. long; leaf blades ovate-lanceolate, 9 cm. long, 2.5 cm. wide, gradually acuminate-cuspidate, rounded at the base, remotely denticulate, glabrous, glossy; flowers axillary, racemose or corymbose at the summit, the floral leaves much smaller (5–3 cm. long); pedicels 35 mm. long, puberulent, bibracteolate below the middle; hypanthium obconic, puberulent; sepals sublinear, 8 mm. long, entire, suberect; corolla red(?), puberulent, straight, 36 mm. long, the lobes linear, 8–12 mm. long; stamens glabrous. Neg. 30997.

Without locality, *Herb. Presl*.

9. *Siphocampylus aurocinctus* E. Wimm. Repert. Sp. Nov. 19: 243. 1924.

A shrub 2 meters high, sometimes climbing; leaves with petioles 8–15 mm. long and puberulent, elliptic to ovate-elliptic, acute, subrotund at the base, callous-denticulate, 8–15 cm. long, 4–8.5 mm. wide, glabrous above, pubescent, especially on the veins, beneath;

flowers axillary, often crowded at the summit, the floral leaves then oblong-lanceolate, acuminate, acute at the base; pedicels 4 cm. long, pubescent, without bracteoles; hypanthium campanulate-turbinate, pubescent; sepals linear, 10–11 mm. long, pubescent, spreading, with 1–2 teeth on each side; corolla scarlet, with orange-red limb, puberulent, 40–46 mm. long, the lobes linear, 12–15 mm. long; stamen tube glabrous.

Ayacucho: Aina, between Huanta and Río Apurímac, open woods, 750–1,000 meters, *Killip & Smith 22689*. Prov. Huanta, road from Tambo via Osno to Río Apurímac, above Aina, 1,500–1,700 meters, *Weberbauer 5598*, type.

10. *Siphocampylus bichromatus* E. Wimm. Repert. Sp. Nov. 19: 253. 1924.

A shrub 2 meters high with granular and upward arachnoid-floccose branches; petiole 6–8 mm. long; leaf blades lanceolate, 8–10 cm. long, 2.2 cm. wide, acute at both ends; irregularly denticulate, glabrous and rugose above, white-arachnoid-tomentose beneath; flowers axillary, corymbiformly arranged at the summit; pedicels 5–7 cm. long, floccose, with 2 minute bractlets above the base; hypanthium turbinate, tomentose; sepals linear, denticulate, suberect, floccose-tomentulose, 11 mm. long; corolla scarlet with orange-red limb, glabrous, nearly straight, 35 mm. long, the lobes sublinear, about 11 mm. long; stamen tube glabrous.

Huancavelica: Prov. Tayacaja, mountains at the left side of Río Mantaro, northeast of Salcabamba, 3,300 meters, *Weberbauer 6504*, type.

11. *Siphocampylus bilabiatus* A. Zahlbr. Bull. Torrey Club 24: 382. 1897.

An erect, stout herb with terete, puberulent, pithy branches; petiole tortuous, puberulent, 9–12 mm. long; leaves ovate-triangular, 9 cm. long, 3.4 cm. wide, gradually tapering to the tip, subcordate to rounded at the base, remotely exserted-denticulate, glabrous and rugose above, puberulent beneath; flowers axillary; pedicels 25–55 mm. long, puberulent, without bractlets; hypanthium turbinate; sepals linear, 16–21 mm. long, spreading, entire, glabrescent; corolla puberulent, nearly straight, scarcely dilated to the throat, 55 mm. long, 8 mm. wide at the throat when pressed, the 2 upper lobes grown together nearly to the middle, 22 mm. long, the 3 lower lobes nearly equal, 16 mm. long; filaments, especially on the lower side, puberulent; anther tube 9 mm. long, white-pilose in the fissures.

Peru: Perhaps occurring. Bolivia (Yungas, *Bang 2464*, type).

12. *Siphocampylus biserratus* (Cav.) A. DC. in DC. Prodr. 7: 397. 1839. *Lobelia biserrata* Cav. Icon. 6: 10. pl. 514. 1801. *S. Cavanillesianus* G. Don, Gen. Syst. 3: 702. 1834.

A coarse herb 60–90 cm. high; leaves short-petiolate or nearly sessile, ovate, 6.5 cm. long, 3 cm. wide, acute, rounded at the base, unequally dentate or doubly dentate, sparsely puberulent above, gray-tomentulose beneath; flowers solitary in the axils of the leaves, but mostly approximate and thus forming a leafy raceme; pedicels 15–20 mm. long, tomentose, bibracteolate above the base; hypanthium hemispheric, tomentose; sepals subulate, 2–4 mm. long, denticulate, tomentose, recurved at the tip; corolla yellow streaked with orange-red, glabrous or pubescent along the nerves, about 44 mm. long, the lobes linear, 16 mm. long; filaments glabrous; anther tube glabrous, with 5 little tufts of hairs at the base.

Ancash: Prov. Cajatamba, Ocros, on grassy mats with interspersed shrubs, 3,200–3,400 meters, *Weberbauer 2665*.—Junín: Between Palca and Chanchamayo, *Raimondi 12381*.—Lima: Near Buenaventura, *Née*, type in herb. Madrid. Matucana, *363*. Above Obrajillo, *Pennell 14425*. Río Blanco, open hillside, 3,500 meters, *Killip & Smith 21623*. San Damián, *Raimondi 10688*. Between San Mateo and Tarma, *Raimondi 12382*.—Department unknown: Anchi, river bank, *Salvatierra*. Without data: *MacLean*.

12a. *Siphocampylus biserratus* var. *petiolaris* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 737. 1929.

Petioles 5–7 mm. long; leaf blades subovate-oblong to oblong, 5.6 cm. long, 2 cm. wide, acute to obtuse, at the base shortly cuneate to acute, sharply dentate.

Junín: Between Palca and Chanchamayo, *Raimondi 2396*.—Lima: Near Obrajillo in the Valley of Canta, *Cruckshanks*. Quebrada de San Mateo, *Isern 2090*.

Siphocampylus biserratus var. *latifolius* A. DC. loc. cit. (leaves larger and sessile; Peru, *Matthews 520*) is not different from the type.

13. *Siphocampylus boliviensis* A. Zahlbr. Ann. Naturhist. Hofmus. Wien 6: 443. 1891.

A coarse herb or a suffrutescent plant; stem gray-tomentose above; petiole 15 mm. long; leaves ovate-lanceolate, 16 cm. long, 3.5 cm. wide, gradually tapering to the tip, subacute at the base, densely and finely denticulate, rugose and dull on the upper surface, pubescent and along the midvein tomentose beneath; flowers solitary in the axils of the upper leaves and becoming corymbose at the

summit; pedicels about 10 cm. long, pubescent; hypanthium depressed-globose, tomentulose; sepals triangular, 4–5 mm. long, entire, puberulent, erect; corolla red(?), puberulent, straight, 45 mm. long, the lobes linear, 15–18 mm. long; filaments pubescent; anthers glabrous. Neg. 9082.

Peru: Probably. Bolivia (near Sorata, along fences and woods everywhere, 2,700–3,300 meters, *Mandon* 496, type; *Rusby* 645. Yungas, *Weddell* 4268).

14. *Siphocampylus Buesii* E. Wimm. Repert. Sp. Nov. 38: 17. 1935.

A climbing shrub with angular, ferruginous-scabrous-pubescent branches; petiole 4 mm. long; leaves elliptic-oblong to ovate-oblong, 35–44 mm. long, 15–18 mm. wide, subacuminate, rotund at the base, callous-denticulate, glabrous above, villous beneath especially on the veins; pedicels in the axils of leaves or bracts, pubescent, 7 mm. long; inflorescence probably a terminal raceme; hypanthium obconic; sepals sublinear, 7 mm. long, entire, pubescent, erect; corolla red(?), puberulent, 49 mm. long; filaments glabrous; anther tube 7 mm. long, pilose at the apex.—This species is closely related to *S. angustiflorus*, from which it differs in its pubescence, sepals, and corolla.

Cuzco: *Bües*, type.

15. *Siphocampylus calodontus* E. Wimm. Repert. Sp. Nov. 29: 87. *pl.* 128, *f.* 4. 1931.

A glabrous, climbing shrub; petioles 3–5 mm. long; leaves oblong, 6–8 cm. long, 2.5–3 cm. wide, acute at both ends, densely and finely sharp-dentate; flowers in loose, corymbiform racemes; bracts small, lanceolate; pedicels 40–55 mm. long; hypanthium hemispheric; sepals 7 mm. long, reflexed, triangular-linear, subdenticulate; corolla red, nearly straight, 40 mm. long, the lobes sublinear, 10 mm. long; stamen tube glabrous.

Cajamarca: Santa Cruz, 2,100–2,400 meters, *Pearce*, type.

16. *Siphocampylus Candollei* E. Wimm. Repert. Sp. Nov. 22: 208. 1926. *Lobelia laciniata* Presl, Prodr. Monogr. Lobel. 40. 1836. *S. laciniatus* A. DC. in DC. Prodr. 7: 397. 1839, vix G. Don, Gen. Syst. 3: 704. 1834.

Stem herbaceous, erect, glabrous; petiole 5–15 mm. long; leaves ovate to ovate-oblong, 7–10 cm. long, 1.7–4 cm. wide, gradually tapering to the acute tip, subcordate to shortly cuneate at the base, more or less deeply sinuate-dentate or irregularly and coarsely den-

tate, glabrous; pedicels axillary, 15–17 mm. long, bibracteolate at the base; inflorescence mostly an elongate, leafy, terminal raceme; hypanthium hemispheric-turbinate, subpubescent like the pedicels; sepals sublinear, 4–5 mm. long, recurved at the tip; corolla orange-red, glabrous, 4 cm. long, the lobes linear, about 1 cm. long; stamen tube glabrous. Neg. 30999.

Lima: Tambo de Viso, on rocks near the Lima-Oroya railroad, 2,650 meters, *Weberbauer 122*, type. Matucana, southeastern rock slope, *2892*.

16a. *Siphocampylus Candollei* var. *illustris* E. Wimm. Repert. Sp. Nov. 38: 75. 1935.

Differing from the type in its ovate-oblong leaves, which are rounded and very shortly acuminate at the tip; also in the fiery-red and somewhat longer corolla.

Moquehua: Carumas, in open mixed formation, *Weberbauer 7273*, type.

16b. *Siphocampylus Candollei* var. *breviflorus* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 746. 1929.

Generally smaller in all parts; leaves 5 cm. long, 2 cm. wide, acute; pedicels 1 cm. long; sepals 1.5 mm. long; corolla 3 cm. long.

Lima: Cerro between Surco and Matucana, *Raimondi 12211*, type.

17. *Siphocampylus chloroleucus* E. Wimm. Repert. Sp. Nov. 38: 17. 1935.

A climbing, branched shrub; branches striate and tuberculate; leaves elliptic or ovate-elliptic, 6 cm. long, 3 cm. wide, subacuminate, narrowed at the base to a petiole 5–7 mm. long, the margin remotely denticulate, glabrous; flowers in terminal, somewhat loose, one-sided racemes; bracts subulate, small; pedicels 1 cm. long, scabrous; hypanthium turbinate, with 5 dentiform lobes; corolla greenish white, glabrous, 37 mm. long, its tube 8 mm., the lobes about 3 cm. long; stamen tube glabrous.

Cuzco: Vilcabamba, *5143*, *5774*.—Junín. Chanchamayo Valley, 1,500 meters, *Schunke 489*. La Merced, Hacienda Schunke, 1,200 meters, *Pennell 14425*.

18. *Siphocampylus citrinus* E. Wimm. Repert. Sp. Nov. 38: 75. 1935.

Stem shrubby, thinly tomentose, 1.5 meters high; leaves short-petioled (2–3 mm.), oblong, 9 cm. long, 2.8 cm. wide, obtuse at both

ends, the margin revolute, denticulate, rugose and glabrous above but pubescent along the midvein, tomentose beneath; flowers solitary in the axils of the upper leaves; pedicels 25 mm. long, pubescent at the base; otherwise glabrous; hypanthium hemispheric; sepals sub-linear, 6 mm. long, denticulate, ciliate, erect; corolla lemon-yellow, 35 mm. long, pubescent along the nerves, the lobes sublinear, about 13 mm. long; stamen tube glabrous.

Cuzco: Prov. Quispicanchi, Marcapata Valley, Chaupichaca, mixed formation, 1,700 meters, *Weberbauer 7829*, type.

19. *Siphocampylus Clotho* E. Wimm. Repert. Sp. Nov. 19: 254. 1924.

A quite glabrous, climbing shrub with slender branches; petioles tortuous, 6–14 mm. long; leaves ovate-lanceolate, 8 cm. long, 1.4 cm. wide, gradually tapering to the cuspidate tip, rotund to subacute at the base, remotely denticulate; pedicels axillary, 5–11 cm. long, often much longer than the subtending leaves; hypanthium almost none; sepals linear, acute, divaricate to reflexed, undulate, entire, 10–15 mm. long; corolla scarlet, the 3 lower lobes orange-red, minutely puberulent, 6 cm. long, 9 mm. wide at the throat when pressed, the lobes nearly linear, 12–16 mm. long; filaments scarcely pubescent; anther tube 8 mm. long, sparsely pilose along the commissures.

Cuzco: Beyond Janamanche, road from Cuzco to Santa Ana, 3,300 meters, *Weberbauer 4972*, type.

19a. *Siphocampylus Clotho* var. *calvescens* E. Wimm. Repert. Sp. Nov. 19: 255. 1924.

Differing from the type by its shorter (3–5 cm. long) pedicels and quite glabrous stamen tube.

Cuzco: Lucumayo Valley, *Cook & Gilbert 1329*, type.

20. *Siphocampylus Coltinya* E. Wimm. Repert. Sp. Nov. 29: 84. 1931.

A suffrutescent plant a meter high; stem obtuse-angular, puberulent, leafy; lower leaves short-petiolate, the upper sessile; leaf blades triangular-lanceolate, 10–15 cm. long, 2.5–2.8 cm. wide, gradually tapering to the acute tip, rounded at the base and sharply dentate, denticulate toward the apex, membranaceous, glabrous above, puberulent beneath, the lateral veins ascending at an angle of about 70°; flowers numerous, axillary, forming a leafy, terminal raceme about 30 cm. long, the upper floral leaves smaller, lanceolate; pedicels 25 mm. long, hirtellous, with 2 subulate bractlets above the base; hypanthium broadly turbinate, hirtellous; sepals narrowly triangular,

3–4 mm. long, denticulate; corolla scarlet on the upper side, yellow on the lower, inconspicuously puberulent, 4 cm. long, its lobes linear, about 15 mm. long; stamen tube glabrous.

Ayacucho: Hacienda Totorobamba, southwest of Ayacucho, 3,500–3,600 meters, *Weberbauer 5462*, type.

21. *Siphocampylus comosus* (Cav.) G. Don, Gen. Syst. 3: 702. 1834. *Lobelia comosa* Cav. Icon. 6: 9. pl. 512, f. 2. 1801. *S. virgatus* A. DC. in DC. Prodr. 7: 398. 1839.

A suffrutescent plant a meter high; leaves short-petioled, lanceolate, 30–48 mm. long, 5–8 mm. wide, acute at both ends, remotely glandular-denticulate, glabrous above, pubescent beneath, especially on the veins; flowers axillary, approximate at the summit; pedicels 3–4 cm. long, slightly pubescent, shorter than the subtending leaves; hypanthium short-turbinate; sepals subulate, 4–6 mm. long, entire, glabrescent, erect; corolla scarlet with a yellow limb, glabrous, 30–35 mm. long, the lobes linear, 12–14 mm. long; stamen tube glabrous. Neg. 27250.

Without locality: *Pavón*; *Poeppig 1069* (*Lobelia virgata* Poepp. mss.).—Huánuco: In mountains, *Herb. Presl*. Prov. Huánuco, valley of the Chinchao, grass steppe with interspersed shrubs, 1,500–1,600 meters, *Weberbauer 6815*. Camino de Vitoc a los altos de Palca, *Isern 2293*.

21a. *Siphocampylus comosus* var. *atrichus* E. Wimm., var. nov.

Differt a specie typica glabritie totali, pedicellis parum longioribus (4–5.5 cm. longis).

Huánuco: Huacachi near Muña, 1,350 meters, *Macbride 3892*, type in Herb. Field Mus.—Junín: Huacapistana, thickets and open woods, 1,800–2,400 meters, *Killip & Smith 24176*.

22. *Siphocampylus correoides* A. Zahlbr. Bull. Torrey Club 24: 382. 1897.

A climbing shrub with slender, scabrous-hirtellous branches; petioles 3–6 mm. long; leaves ovate to elliptic, 2.5–3 cm. long, 0.8–2 cm. wide, acute, subrounded at the base, remotely sharp-denticulate, subcoriaceous, scabrellate above, ferruginous-puberulent beneath; flowers axillary; pedicels 5–6 cm. long, puberulent; hypanthium broadly turbinate; sepals dentiform, subdenticulate; corolla tube curved, 2 cm. long, puberulent, the lobes linear, spreading, 15 mm. long; stamen tube glabrous.

Peru: Probably occurring. Bolivia (Yungas, *Bang 2483*, type).

23. *Siphocampylus corynellus* Gleason, *Torreyia* 25: 93. 1925.
S. Raimondii E. Wimm. *Notizbl. Bot. Gart. Berlin* 10: 741. 1929.

Stem suffrutescent, thinly tomentose above; petiole 8-10 mm. long; leaf blades oblong-linear, 6-11 cm. long, 0.8-1.5 mm. wide, acute at both ends, denticulate, glabrous and rugose above, reticulate and tomentulose beneath; peduncles axillary, crowded at the summit, 6-9 cm. long; hypanthium broadly turbinate; sepals narrowly triangular, 4-5 mm. long, erect; corolla whitish red, 34-38 mm. long, glabrous, the lower lobe linear, about 27 mm. long, separated nearly to the base, the upper lobes about 20 mm. long (corolla form c); filaments glabrous, 21 mm. long; anther tube 12 mm. long, densely woolly at the apex.

Department unknown: Panahuanca mountains, *Mathews* 1185, type.—Huancavelica; Prov. Tayacaja, between Colcabamba and Paucarbamba, *Raimondi* 10264, type of *S. Raimondii*.

24. *Siphocampylus corynoides* E. Wimm. *Repert. Sp. Nov.* 19: 255. 1924.

A shrub 2 meters high with stout, white-floccose-tomentose branches; leaves obovate-oblong, 6-11 cm. long, 2-4 cm. wide, rounded at the apex, long-cuneate to the base and narrowed to a petiole 9-11 mm. long, the margin denticulate, glabrescent above, pale and arachnoid-tomentose beneath; flowers axillary, corymbose at the summit; pedicels 7-9 cm. long, sparsely floccose, bibracteolate at the base; hypanthium turbinate to hemispheric, villous or glabrescent; sepals narrowly triangular, 3 mm. long, entire, glabrescent; corolla (form c) greenish, purple-suffused, floccose or arachnoid, 30-36 mm. long, 10 mm. wide, the lobes sublinear, the lower lobe separated from the corolla nearly to the base, about 25 mm. long; filaments glabrous; anther tube 12 mm. long, villous above.

Cuzco: Beyond Janamanche, road from Cuzco to Santa Ana, 3,200 meters, *Weberbauer* 4966, type. Lucumayo Valley, *Cook & Gilbert* 1326. "South America," *Pearce*. "Concho-concho."

24a. *Siphocampylus corynoides* f. *fortunatus* E. Wimm. *Repert. Sp. Nov.* 38: 20. 1935.

Differing from the type by the oblong to ovate-oblong leaves, thinly arachnoid-tomentose beneath; sepals twice longer, 7-8 mm. long; corolla to 45 mm. long.

Ayacucho: Prov. Huanta, Choimacota Valley, evergreen bush-wood, 3,000 meters, *Weberbauer* 7582, type.—Without data: *Herrera* 1217.

25. *Siphocampylus cutervensis* A. Zahlbr. Ann. Hofmus. Wien 6: 442. 1891. *S. megalandrus* E. Wimm. Repert. Sp. Nov. 19: 259. 1924.

A fetid, suffrutescent plant, the branches compressed-angular, especially on the upper parts floccose-tomentulose; leaves oblong, sometimes obovate-oblong, 11–15 cm. long, 2.6–4 cm. wide, acute to acuminate at both ends, narrowed to a petiole 7–15 mm. long, densely denticulate, hirtellous above, tomentulose beneath, especially on the veins; flowers axillary, mostly crowded at the summit; pedicels 10–12 cm. long, floccose, without bractlets; hypanthium depressed-globose; sepals triangular, entire, hirtellous, 4 mm. long; corolla (form d) greenish white(?), glabrescent, its tube about 2 cm. long, the lobes triangular-linear, falcate, 20–16 mm. long; filaments glabrous, free from the corolla; anther tube 10 mm. long, somewhat pilose along the commissures, naked at the orifice or the 2 lower anthers inconspicuously pilose at the tip. Neg. 31000.

Cajamarca: Cutervo, *Jelski* 71, 75, type.—Without locality: *Weberbauer*, type of *S. megalandrus*.

26. *Siphocampylus dependens* (R. & P.) G. Don, Gen. Syst. 3: 704. 1834. *Lobelia dependens* R. & P. ex G. Don, loc. cit. *L. rugosa* Presl, Prodr. Monogr. Lobel. 34. 1836. *S. rugosus* A. DC. in DC. Prodr. 7: 399. 1839.

A climbing shrub, the branches pendent, tomentose upward; petioles about 15 mm. long; leaf blades ovate-lanceolate, 8–13.5 cm. long, 2.3–4.5 cm. wide, gradually tapering to the acuminate tip, rounded to subcordate at the base, salient-denticulate, coriaceous, glabrous and glossy above, tomentose beneath; pedicels axillary, 5–6.5 cm. long; floral leaves foliaceous, the upper ones often lanceolate and much smaller and the inflorescence then almost racemose; hypanthium turbinate, tomentose; sepals linear, 1 cm. long, entire, spreading, tomentose; corolla purple, tomentulose, 36 mm. long, the lobes triangular-linear, about 12 mm. long; filaments glabrous; anther tube white-pubescent above, 7 mm. long. Neg. 27252.

Without locality: *Pavón* 85, type.—Huánuco: Yanano, in low montaña, sunny slopes, 1,800 meters, 4947. Pano, 2205. Pampayacu, *Kanehira* 196. Tomaiquichua, 2426.—Junín: Prov. Tarma, mountains west of Huacapistana, among bushes, 2,300–2,400 meters, *Weberbauer* 2167. Prov. Jauja, valley of Río de Comas, 2,600–2,700 meters, *Weberbauer* 6613.

26a. *Siphocampylus dependens* var. *undulatus* E. Wimm. Repert. Sp. Nov. 22: 209. 1926.

Leaves gray-tomentose beneath; pedicels 7–10 cm. long, without bractlets; sepals 8–15 mm. long, divaricate to reflexed, denticulate; corolla red with yellow mouth, 30–46 mm. long; anther tube glabrous.

Cuzco: Urubamba Valley, San Miguel, Nucjchu, 1,800 meters, *Cook & Gilbert 1161*, type. Urubamba Valley, 2,050 meters, *Herrera 2009, 2658*. Urubamba Valley, Cedrobamba, 2,200 meters, *Herrera 1556*. Machupicchu, 2,200 meters, *Herrera 3215, 3280*.

27. *Siphocampylus divaricatus* Benth. Pl. Hartweg. 138. 1844.

Shrubby, somewhat climbing, quite glabrous; petiole 1 cm. long; leaves oblong-elliptic, rarely ovate-oblong, 4 cm. long, 2 cm. wide, obtuse, obtuse or shortly cuneate at the base, remotely denticulate, thickish, glossy; flowers racemose, with small, foliaceous bracts or often the lower flowers in the axils of the upper leaves; pedicels secund, 1 cm. long; hypanthium turbinate, with 5 dentiform lobes; corolla scarlet, straight, about 48 mm. long, the lobes linear, about 12 mm. long; stamen tube glabrous, 50 mm. long. Neg. 27253.

Peru: Not yet collected. Ecuador (mountains near Loja, *Hartweg 774*, type).

28. *Siphocampylus Dossennus* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 742. 1929.

Stem herbaceous, the branches puberulent above; petioles stout, 5 mm. long; leaves firm, oblong, 6 cm. long, 1.9 cm. wide, acute, obtuse at the base, the margin undulate and denticulate, rugose and subhirtellous above, reticulate and hirtellous beneath; flowers in the axils of small leaves, corymbose-crowded at the top; pedicels densely puberulent, 10–18 mm. long, with 2 small bractlets above the base; hypanthium hemispheric-turbinate, puberulent, the lobes 5–6 mm. long, sublinear, denticulate, recurved at the apex; corolla blood-red, glabrous, 46 mm. long, the tube 33 mm. long, abruptly and strongly curved 1 cm. above its base, the lobes sub-linear, about 12 mm. long; stamen tube glabrous.

Apurímac: Prov. Abancaí, Quebrada de Antilla, *Raimondi 9692*, type.

29. *Siphocampylus Elfriedi* E. Wimm. Repert. Sp. Nov. 38: 75. 1935.

A rough, branched shrub; leaves firm, tuberculate-hirtellous, lanceolate, 5 cm. long, 1 cm. wide, acute, narrowed at the base into a petiole 2–5 mm. long, the margin callous-denticulate; flowers in the axils of the upper leaves; pedicels 7 cm. long, tuberculate-hirtellous, bibracteolate at the base; hypanthium turbinate; sepals

sublinear, denticulate, somewhat spreading, 8 mm. long; corolla nearly rose-colored with greenish yellow lobes, tuberculate-hirtellous, 43 mm. long, the lobes sublinear, 9–7 mm. long; stamen tube glabrous.

Cuzco: Paso de Tres Cruces, Cerro de Cusilluyoc, rocky banks and knolls on paramo, 3,800–3,900 meters, *Pennell 13841*, type. Valle de Pillahuata, mountains of Paucartambo, *Herrera 3326*. Paucartambo, 4,000 meters, *Soukup 382*.

30. *Siphocampylus fissus* Gleason, *Torrey* 25: 95. 1925.

Stem woody, twining, scabrous-pubescent above; petioles stout, 4–6 mm. long; leaf blades coriaceous, shining above, reticulate and scabrous-pubescent beneath, broadly ovate-oblong, 20–27 mm. long, 12–18 mm. wide, broadly rounded at the apex, truncate or broadly rounded at the base, subrevolute at the cartilaginous margin, sharply and saliently denticulate; pedicels axillary, 15 mm. long, densely pubescent, forming a leafy raceme; hypanthium turbinate, densely pubescent; sepals oblong, rounded at the apex, 1.5 mm. long, thinly pubescent; corolla pale yellowish green, the tube densely pubescent, 10 mm. long, 3–4 mm. wide when pressed, the lobes closely pubescent, narrowly linear, the upper 23 mm. long, the lower a little shorter; filaments puberulent above; anther tube 10 mm. long, glabrous.

Huánuco: Playapampa, 2,700 meters, *4863*, type.

31. *Siphocampylus flagelliformis* A. Zahlbr. *Bull. Torrey Club* 24: 380. 1897. *S. altiscandens* Gleason, op. cit. 48: 198. 1921.

A climbing shrub with slender, striate, scabrellate branches; leaves on petioles 3 mm. long, coriaceous, short-hirtellous above, hirtellous beneath, especially on the veins, ovate-oblong, 7 cm. long, 3 cm. wide, subacute at the tip, subrounded at the base, remotely callous-denticulate; inflorescences racemose, the bracts small, filiform, the lower flowers often in the axils of foliaceous bracts or of normal leaves; pedicels 10–12 mm. long, rough-hirtellous; hypanthium turbinate; sepals triangular, 2 mm. long, denticulate; corolla narrow, carmine or rose-colored, glabrous, 30–35 mm. long, the lobes linear, about 8 mm. long; filaments glabrous; anther tube 5 mm. long, pilose at the orifice.

Peru: Probably. Bolivia (Yungas, *Rusby, 646*, type; *Bang 2553*).

32. *Siphocampylus floribundus* A. Zahlbr. *Bot. Jahrb.* 37: 460. 1906.

Branches climbing, pendent, striate, scabrous; petioles 7–10 mm. long; leaf blades ovate-oblong to oblong, 3–6 cm. long, 1.5–2.5 cm.

wide, obtuse at the apex, acute at the base, slightly revolute at the margin, callous-denticulate, coriaceous, glabrous above, rough-subhirtellous beneath; racemes terminal, secund, many-flowered; bracts subulate; pedicels 20–25 mm. long, densely and minutely strigose; hypanthium obconic; sepals dentiform; corolla greenish suffused with purplish, hirtellous, 32 mm. long, the tube narrow, 10 mm. long, the lobes linear, about 17 mm. long, at first spreading, finally recurved; filaments 23 mm. long, glabrous; anther tube 7 mm. long, 1.5 mm. wide, pilose in the fissures. Neg. 31002.

Huánuco: Prov. Huamalíes, mountains southwest of Monzón, 2,400–2,500 meters, *Weberbauer 3421*, type.

33. *Siphocampylus foliosus* Griseb. var. *subcanus* E. Wimm., var. nov.

Herba valida, apparenter erecta, simplex, 60–90 cm. alta; caulis digiti crassitie, medullosus, obtuse angulatus, inferne glabrescens, superne pubescens, foliosus; folia inferiora breviter petiolata, ovato-oblonga, superiora oblonga et sessilia, summa saepe lanceolata et nonnunquam in bracteas transeuntia; lamina apice subacuta et mucronulata, basi truncata usque obtusa, margine dense et tenuiter denticulata, membranacea, supra sparsius, subtus densissime hirtella et subcana; folia inferiora 13 cm. longa, 4 cm. lata, cetera 10–7 cm. longa, 2.2–1 cm. lata; flores in racemo foliato, subdenso; folia floralia superiora quandoque bracteiformia et pedicello breviora; pedicelli 20–35 mm. longi, puberuli; hypanthium hemispherico-turbinatum, puberulum, ca. 4 mm. diam; lobi calycis anguste triangulares, plerumque integri, puberuli, 2–3 mm. longi; corolla rosea, subpubescens vel glabrata, 3–4 cm. longa, tubus supra basin parum attenuatus, dein leviter ampliatus et in lobos 5 lineares, 12–15 mm. longos partitus; filamentarum et antherarum 7 mm. longarum tubus glaber, antherae 2 inferiores piloso-penicillatae in apice.

Puno: In collibus graminosis prope Ayapata, *Lechler 1940*, type in herb. Univ. Goettingen. Lago Titicaca, *Seler 135* p. p. Frequent in Bolivia.

The type form differs by the leaves, which are not gray-tomentulose beneath but hirtellous, and the smaller (25 mm. long), glabrous corolla. Also the leaf tip is gradually acute.

34. *Siphocampylus Goebelii* E. Wimm. Repert. Sp. Nov. 38: 76. 1935.

Branches pubescent above; petioles puberulent, 15–20 mm. long; leaf blades thin, plane, glabrate above, puberulent beneath

along the veins, elliptic to ovate-elliptic, 11–13 cm. long, 5.5–7 cm. wide, short-acuminate, subrounded at the base, remotely denticulate; pedicels axillary, about 9 cm. long, sparsely puberulent; hypanthium hemispheric; sepals linear, entire, erect, 4 mm. long; corolla violet(?), sparsely puberulent, 28 mm. long, the lobes linear, about 10 mm. long; filaments glabrous; anther tube 5 mm. long, glabrous.

Without locality: *Haenke*, type.

35. *Siphocampylus grandiflorus* E. Wimm. Repert. Sp. Nov. 19: 257. 1924.

A climbing shrub, fulvous-tomentose on the upper parts; petioles 7–12 mm. long; leaf blades ovate to ovate-oblong, 8–12 cm. long, 3–5 cm. wide, acuminate, cordate to rounded at the base, repand-denticulate, sparsely beset above with forked hairs, fulvous-tomentose (villous, fasciculate hairs) beneath; flowers axillary, crowded at the top; pedicels about 7 cm. long, floccose; hypanthium short-turbinate; sepals linear, 8–9 mm. long, subdenticulate, divaricate to reflexed; corolla scarlet, the lobes yellow, the tube straight, 5 cm. long, the lobes lanceolate, about 15 mm. long; stamens glabrous, the anther tube 9 mm. long.

Ayacucho: Prov. Huanta, road from Tambo via Osno to Río Apurímac, 2,800 meters, *Weberbauer 5618*, type.

36. *Siphocampylus heliades* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 744. 1929.

Stem shrubby, pubescent above; petioles 8–15 mm. long, pubescent; leaf blades elliptic, 12 cm. long, 5.8 cm. wide, acute, subrounded at the base, slightly revolute at the margin, callous-denticulate, rugose, glossy and glabrescent above, reticulate and subpubescent beneath; flowers axillary, corymbose at the summit, the subtending leaves oblong to lanceolate, 50–65 mm. long, 10–22 mm. wide; pedicels 5–7 cm. long, villous at the base, otherwise glabrescent; hypanthium hemispheric or turbinate; sepals sublinear, entire, subciliate, spreading, 6 mm. long; corolla red and yellow(?), glabrous, 38 mm. long, the lobes about 12 mm. long; stamen tube glabrous, the anthers 6 mm. long.

Junín: Road between Punto and Andamarca, *Raimondi 8763*, type.

37. *Siphocampylus Helmuti* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 745. 1929.

Branches climbing, slender, grooved, tuberculate, puberulent above; petioles 5 mm. long, tortuous; leaves oblong-ovate, 44 mm.

long, 16 mm. wide, gradually tapering to the subacuminate tip, rounded at the base, callous-denticulate, glabrous and somewhat shining above, subpuberulent on the prominent principal veins, the venation inconspicuous; flowers in the axils of small leaves (22 mm. long, 10 mm. wide), nearly forming a corymbose raceme; pedicels 25–30 mm. long, puberulent, with 2 bractlets above the base; hypanthium turbinate; sepals subulate, entire, 2.5 mm. long, puberulent; corolla red, glabrous, 6 cm. long, the lobes sublinear, 18 mm. long; stamen tube glabrous.

Junín: Road to Pangoa, between San José and Cueva de La Achira, *Raimondi* 8777, type.

38. *Siphocampylus Humboldtianus* (Presl) A. DC. in DC. Prodr. 7: 398. 1839. *Lobelia Humboldtiana* Presl, Prodr. Monogr. Lobel. 35. 1836. *S. pubescens* Benth. Pl. Hartweg. 139. 1844, p. p.

A suffruticose, climbing, pubescent plant; petioles 6–20 mm. long; leaves ovate-elongate, 5.5–8 cm. long, 2–3 cm. wide, gradually tapering to the acute tip, subcordate to truncate at the base, denticulate, glabrate above, pubescent beneath; flowers axillary; pedicels 4–7 cm. long; hypanthium turbinate; sepals triangular, 5–7 mm. long, entire; corolla red(?), 35 mm. long, the lobes narrowly triangular, falcate, unequal, the upper about 13, the lower 7 mm. long; filaments pubescent; anther tube pilose.

Without locality: *Humboldt*, type. Ecuador (Prov. Loja, in mountains, *Jameson*. In the mountains of Paccha, *Hartweg* 780).

38a. *Siphocampylus Humboldtianus* var. *ovatus* E. Wimm., var. nov. *S. pubescens* Benth. loc. cit. pro parte.

Folia late ovata, 5–6 cm. longa, 3.5–4 cm. lata, basi rotundata; corolla major, 45 mm. longa; labium inferius videtur trifidum. Neg. 31018.

Ecuador: *Hartweg* 780 (type of *S. pubescens* in herb. Cambridge; cotype in herb. Berlin).

39. *Siphocampylus Jelskii* A. Zahlbr. Ann. Hofmus. Wien 6: 441. 1891.

Stem suffruticose, erect, brownish-pubescent; leaves sessile, very dense, reflexed, sublinear, 11–13 cm. long, 0.6–0.8 cm. wide, sub-obtuse at the apex, broader at the base, scabrellate and rugose above, hirtellous beneath; flowers axillary, crowded at the summit; pedicels about 10 cm. long, puberulent, somewhat shorter than the subtending, stiff-erect leaves; hypanthium obconic, strongly 10-nerved, puberu-

lent, about 9 mm. long; sepals narrowly triangular, 22–24 mm. long, denticulate, somewhat revolute, erect; corolla (form b) 4 cm. long, puberulent, its tube 16 mm. long, 15 mm. wide at the throat when pressed, the lobes sublinear-acute, falcate, 3–2 cm. long; filaments 45 mm. long, pubescent; anther tube densely hirsute, especially distally. Neg. 31004.

Cajamarca: Between Chota and Cutervo, *Jelski 210*, type.
—Loreto: Pacasmayo to Moyobamba, 3,400–3,500 meters, *Stuebel 54*.

39a. *Siphocampylus Jelskii* f. *eugenius* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 740. 1929.

Corolla larger, 52 mm. long, its tube 27 mm. long, expanded to the throat, the lobes unequal, 25–16 mm. long; filaments long-exserted; anther tube 9 mm. long, 4 mm. wide; pedicels with minute bractlets above the base.

Cajamarca: Between Chota and Cutervo, *Raimondi 3766*, type.

40. *Siphocampylus igneus* (Vell.) E. Wimm. Repert. Sp. Nov. 22: 211. 1926. *Lobelia ignea* Vell. Fl. Flum. 353. 1825. et Fl. Flum. Icon. 8: pl. 128. 1827. *S. corymbiferus* Pohl, Pl. Bras. Icon. 2: 112. pl. 175. 1831. *S. cardiophyllus* Pohl, op. cit. 110. pl. 173.

Stem erect, 60–90 cm. high, nearly simple, leafy; petiole 8–15 mm. long; leaf blades ovate, 4–7 cm. long, 2–4 cm. wide, acuminate, subcordate to rounded at the base, unequally dentate to denticulate, glabrous or puberulent beneath; flowers in a short, nearly umbellate raceme, or the raceme elongate, the flowers then in the axils of normal leaves; pedicels 15–35 mm. long, glabrous; hypanthium broadly turbinate; sepals triangular-linear, recurved at the tip, entire, 4–5 mm. long, mostly glabrous; corolla scarlet, yellow at the throat, glabrous, 40–45 mm. long, the lobes linear, 10–15 mm. long; stamen tube glabrous.

Puno: Sandía, stony places between bushes, 2,100–2,300 meters, *Weberbauer 524*. Bolivia (Yungas, *Bang 256b*. Prov. Larecaja, *Mandon 499*); frequent in Brazil.

40a. *Siphocampylus igneus* var. *gracilis* (Britton) E. Wimm. loc. cit. *S. gracilis* Britton, Bull. Torrey Club 19: 374. 1892. *S. corymbiferus* var. *gracilis* A. Zahlbr. Bull. Torrey Club 24: 384. 1897.

Stem and leaves densely hirtellous.

Peru: Probably. Bolivia (Yungas, *Rusby 640*; *Bang 644*); frequent in Brazil.

41. **Siphocampylus Krauseanus** E. Wimm. Repert. Sp. Nov. 26: 16. *pl.* 72, *f.* 17. 1929.

Branches striate, pubescent, leafy; petioles 6 mm. long, tomentulose; leaf blades oblong, 4-6 cm. long, 0.9-1.8 cm. wide, acute, obtuse at the base, callous-denticulate, firm, rugose and glabrescent above, densely reticulate and tomentulose beneath; flowers in the axils of the leaves, forming almost a leafy raceme; pedicels 25-30 mm. long, tomentulose; hypanthium turbinate to hemispheric, puberulent; sepals sublinear, entire, erect, 6-7 mm. long; corolla 42 mm. long, glabrous, red or yellow, the lobes linear, 10-13 mm. long; stamen tube glabrous. Neg. 9085.

Cuzco: *Herrera* 1207 p. p. (other specimen *Lobelia decurrens* Cav.). Urubamba Valley, Machupicchu, 2,200 meters, *Herrera* 3260.

42. **Siphocampylus Lobbii** A. Zahlbr. Bot. Jahrb. 37: 457. 1906.

A shrub with climbing, slender, narrowly winged, fimbriate-pubescent branches; leaves short-petiolate, small, broadly ovate, 10-17 mm. long, 7-11 mm. wide, acute, subcordate to rounded at the base, minutely denticulate, glabrous above, scabrellate beneath; pedicels axillary, remote, about 1 cm. long, glabrescent; hypanthium broadly turbinate; sepals subulate, 5-6 mm. long, entire, divaricate; corolla carmine, glabrous, 6 cm. long, 8 mm. wide above when pressed, the lobes linear, about 15 mm. long; stamen tube glabrous, the anthers black, 7 mm. long. Neg. 31008.

Without locality: *Lobb*, type.—Huánuco: Posuso, *Pearce* 555 p. p.

42a. **Siphocampylus Lobbii** var. **megodontus** E. Wimm. Repert. Sp. Nov. 29: 88. *pl.* 127, *f.* 6. 1931.

Differing from the type by its deeply dentate leaves, the lobes triangular, acute, 3-4 mm. long.

Huánuco: Posuso, *Pearce* 555 p. p., type.

43. **Siphocampylus loxensis** (Willd.) Vatke, Linnaea 38: 724. 1874. *Lobelia loxensis* Willd. ex Roem. & Schult. Syst. 5: 72. 1819.

Branches angled, hollow, ferruginous-stellate-tomentose, apparently pendent; petioles stout, 1 cm. long; leaves ovate-oblong or oblong, 7-9 cm. long, 3-3.7 cm. wide, obtuse, subcordate at the base, the margin revolute and densely glandular-denticulate, glossy and glabrous above, ferruginous-tomentose beneath; pedicels about 1 cm. long, somewhat longer than the subulate bracts; hypanthium turbinate; sepals subulate, 4-5 mm. long, erect; bud (only this seen!)

tubular, subfalcate, beaked at the apex, tomentose; anther tube 9 mm. long, glabrous.

Peru: Probably occurring. Ecuador (mountains of Loja, *Humboldt*, type in herb. Willdenow 3946, Berlin).

44. *Siphocampylus macropodioides* A. Zahlbr. Bot. Jahrb. 37: 458. 1906.

Branches striate, pubescent; petioles 2–4 mm. long; leaves ovate to ovate-oblong, 5–9 cm. long, 2–3.7 cm. wide, subacuminate, subcordate to rounded at the base, repand-denticulate, membranous, pale and pubescent on the veins underneath; flowers solitary in the axils of the upper leaves, forming a loose, leafy raceme; pedicels 4–5 cm. long, subpubescent; hypanthium depressed-hemispheric; sepals sublinear, entire, 5 mm. long, puberulent, erect; corolla blood-red, glabrous, 4 cm. long, its tube 22 mm. long, the lobes sublinear, 20–15 mm. long; filaments glabrous; anther tube 6 mm. long, often pilose at the base. Neg. 31009.

Ancash: Near Pampa Romas, between Samanco and Carás, 3,500 meters, *Weberbauer* 3201, type.

45. *Siphocampylus macrostemon* (Presl) A. DC. in DC. Prodr. 7: 403. 1839. *Lobelia macrostemon* Presl, Prodr. Monogr. Lobel. 36. 1836. *Centropogon macrostemon* A. Zahlbr. Repert. Sp. Nov. 14: 181. 1915.

Stem herbaceous, branched, puberulent above; leaves sessile or short-petiolate, elongate-lanceolate, 5–8 cm. long, 1.3–1.5 cm. wide, acute, subrounded at the base, unequally denticulate, short-puberulent, above, densely puberulent beneath; pedicels about 3 cm. long, puberulent, with 2 bractlets above the base; hypanthium hemispheric; sepals subulate, entire, erect, 5–6 mm. long; corolla red(?), glabrous, 4 cm. long, the lobes sublinear, about 12 mm. long; stamen tube glabrous. Negs. 27260, 31010.

Huánuco: Mountains, *Herb. Presl*. Without locality, *Pavón* 77.—Department unknown: Sesuya, *Mathews* 3022.

46. *Siphocampylus Matthiae* A. DC. in DC. Prodr. 7: 405. 1839. *S. Mathewsii* E. Wimm. Repert. Sp. Nov. 19: 258. 1924.

A suffrutescent plant with grooved, pubescent, hollow branchlets; petioles 4–6 mm. long; leaves lanceolate, 14 cm. long, 3.4 cm. wide, subacuminate at both ends, densely callous-denticulate, scarcely hirtellous above, gray-tomentulose beneath; flowers axillary, crowded at the summit; pedicels about 14 cm. long, glabrescent,

with 2 minute bractlets at the base; hypanthium depressed-globose; sepals sublinear, 8–15 mm. long, callous-denticulate, sparsely pubescent, somewhat spreading; corolla (form d) greenish, puberulent, its tube straight, equally wide, 18 mm. long, 4 mm. wide, inflated at the throat, the lobes triangular-linear, subfalcate, deflexed, 22–10 mm. long; filaments glabrous; anther tube 12 mm. long, sparsely pilose, naked at the orifice. Neg. 27262.

Amazonas: Chachapoyas, *Mathews 1672*, type.

47. *Siphocampylus megastoma* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 739. f. 12. 1929.

A tall, branched shrub; petioles 15–20 mm. long, tomentulose; leaves oblong-lanceolate, 13–15 cm. long, 3.5–4.4 cm. wide, subacuminate, acute at the base, densely denticulate, rugose, glabrous above, reticulate and bright ochreous-tomentulose beneath; flowers forming a crowded, terminal raceme; pedicels axillary, compressed, floccose-tomentulose, 12–15 cm. long, bibracteolate at the base; hypanthium half-ovoid, 1 cm. long, tomentulose; sepals linear, 2 cm. long, nearly 3 mm. wide, obtuse, tomentulose, somewhat spreading; corolla (form b) greenish white, tomentulose, the tube 15 mm. long, a little dilated to the (15 mm. wide) throat, the lobes sublinear, unequal, 20–12 mm. long; filaments hirtellous in the upper portion; anther tube 15 mm. long, 7 mm. wide, yellow-hirsute in the commissures, more densely so distally.

Without locality: *Raimondi 2601*, type.

48. *Siphocampylus membranaceus* Britton, Bull. Torrey Club 19: 372. 1892.

A climbing shrub; leaves oblong, 14 cm. long, 4.5 cm. wide, acuminate, obtusely narrowed at the base to the short petiole, densely and finely denticulate, minutely puberulent beneath; inflorescences short, umbel-like, axillary racemes; peduncle stout, solitary, remote, 5 mm. long; pedicels few, about 4 cm. long, striate, hirtellous; bracts inconspicuous; hypanthium short, broadly turbinate; sepals subulate, entire, subreflexed, 1 cm. long; corolla red, nearly straight, glabrous, about 5 cm. long, the lobes sublinear, 12 mm. long; stamen tube glabrous.

Peru: Probably occurring. Bolivia (Yungas, 1,800 meters, *Rusby 651*).

49. *Siphocampylus nobilis* E. Wimm. Repert. Sp. Nov. 26: 12. pl. 72, f. 23. 1929.

A climbing, glabrous, branched shrub; leaves narrowly linear, 6–8 cm. long, 0.2–0.3 cm. wide, acute, narrowed into a petiole 4–5 mm. long, slightly repand and remotely dentate; pedicels axillary, slender, 4–5 cm. long; hypanthium obconic; sepals subulate, 2 mm. long; corolla purple with yellow limb, its tube 35 cm. long, the lobes linear, 8–13 mm. long; stamen tube glabrous. Neg. 31012.

Ayacucho: Prov. Huanta, valley of Río Huancabamba above Shumaya, 2,200–2,300 meters, *Weberbauer 6291*, type.

50. *Siphocampylus obovatus* (G. Don) E. Wimm. Repert. Sp. Nov. 38: 19. 1935. *Tupa obovata* G. Don, Gen. Syst. 3: 700. 1834. *Rapuntium obovatum* Presl, Prodr. Monogr. Lobel. 25. 1836.

Branches hollow, smooth, glabrous; petioles stout, 7 mm. long; leaves obovate-oblong, 6.5–8.5 cm. long, 2.3–3 cm. wide, with a rounded apex and a gradually narrowed base, the margin revolute and callous-denticulate, coriaceous, rugose, glossy, glabrous above, densely hirtellous beneath, the venation reticulate; pedicels axillary, glabrous, 5–8 cm. long; hypanthium depressed-globose, glabrate; sepals oblong-ovate, obtuse, subhirtellous, 2 mm. long; corolla whitish greenish, glabrescent, 3 cm. long, its tube very short, the upper lobes 22 mm. long, the lowest lobe separated nearly to the base of the corolla, 25 mm. long; filaments glabrous, 15 mm. long; anther tube 9 mm. long, pilose at the orifice, but the 2 lower anthers longer-pilose at the tip. Neg. 29451.

Without locality: Ruiz & Pavón sub "*Lobelia incana*," type.

51. *Siphocampylus oblongifolius* Rusby, Mem. Torrey Club 6: 73. 1896.

A climbing, quite glabrous shrub 3–4 meters high; leaves oblong, 10 cm. long, 2–3 cm. wide, acute, obtuse at the base, with a short petiole, entire with remote, callous teeth, coriaceous; pedicels in 2's or 3's in the axils of the leaves, compressed, divaricate, about 2 cm. long; hypanthium turbinate; sepals subulate, entire, reflexed, 5 mm. long; corolla red, 37 mm. long, narrow, the lobes linear, about 1 cm. long; anther tube 6 mm. long, glabrous.

Peru: Possibly occurring. Bolivia (La Paz, *Bang 1461*; *Buchtien 1499*).

51a. *Siphocampylus oblongifolius* var. *crenatus* E. Wimm. Repert. Sp. Nov. 38: 19. 1935.

Leaves with an obtuse, mucronate tip, the margin plane-crenate with a tooth between the crenations; in the axils of the leaves a

stout peduncle 8 mm. long which bears 6-8 pedicels at the top; bracts subulate; pedicels 23-27 mm. long.

Bolivia (La Paz, San Carlos, rain forest, 800 meters, *Troll 2770*).

52. *Siphocampylus onagrius* E. Wimm. Repert. Sp. Nov. 22: 212. 1926.

A climbing shrub, gray-lurid-tomentose above, the tomentum consisting of simple and fasciculate hairs; leaves petiolate (8 mm. long), ovate-triangular, with cordate base, gradually tapering to an acute tip, 7.5 cm. long, 2.5 cm. wide, unequally callous-denticulate, rugose, glossy and glabrous above, gray-tomentose beneath; pedicels axillary, 10 cm. long, with 2 filiform bractlets 3-5 mm. long at the base; hypanthium broadly turbinate; sepals 1 cm. long, linear, denticulate, spreading; corolla purple, with a yellow limb, 55 mm. long, tomentulose, the lobes about 12 mm. long; filaments glabrous; anther tube distally pilose. Neg. 31013.

Mountains of Andamarca, *Mathews 1187*, type.

53. *Siphocampylus Orbignianus* A. DC. in DC. Prodr. 7: 405. 1839; Fl. Serres 6: 15. *pl. 544*. 1850-51; Bot. Mag. *pl. 4713*. 1853. *S. volubilis* Britton, Bull. Torrey Club 19: 372. 1892 et Mem. Torrey Club 6: 72. 1896, non G. Don.

A shrub, the slender branches pubescent toward the ends; petioles 1 cm. long; leaves verticillate, mostly in 3's, oblong to ovate-oblong, 9 cm. long, 3.5 cm. wide, acuminate, narrowed to subrounded at the base, unequally dentate and denticulate, scabrellous above, pubescent beneath; pedicels axillary 3-4 cm. long, bibracteolate at the base; hypanthium broadly turbinate; sepals linear, 12-14 mm. long, divaricate; corolla variable in color, yellowish green and red-shaded or violet or violet-red with bright green lobes, puberulent, 55 mm. long, the lobes 12-7 mm. long.

Peru: Probably. Bolivia (Yungas; Sorata; frequent).

54. *Siphocampylus ovatus* (G. Don) E. Wimm. Repert. Sp. Nov. 38: 18. 1935. *Tupa ovata* G. Don, Gen. Syst. 3: 700. 1834. *Rapuntium ovatum* Presl, Prodr. Monogr. Lobel. 29. 1836. *Lobelia pendulifolia* Presl, op. cit. 35. *S. pendulifolius* A. DC. in DC. Prodr. 7: 398. 1839.

A glabrous, climbing shrub with pendent branches; petiole 5-10 mm. long; leaves coriaceous, glossy, oblong-ovate, 5-6 cm. long, 2.5-3 cm. wide, obtuse, mucronate at the apex, rounded at the base, remotely glandular-denticulate; inflorescence a terminal, secund

raceme; bracts oblong or lanceolate, about 1 cm. long; pedicels about 1 cm. long, bibracteolate at the middle; hypanthium turbinate, its lobes dentiform; corolla pink(?), its tube short, 1 cm. long, the lobes linear, recurved, 22 mm. long; stamen tube glabrous. Neg. 29452.

Peru: *Ruiz & Pavón* 16.—Huánuco: Mountains of Huánuco: *Presl Herb.*—Puno: Prov. Carabaya, rocky hills near Quiaca, *Weddell* 4629.

55. *Siphocampylus pallidus* E. Wimm., sp. nov.

Suffrutex circiter 50 cm. altus; caulis teres, fistulosus, glaber, internodia 1–5 cm. longa; folia coriacea, supra glabra, subtus ad nervos adpresso pubescentia, oblongo-lanceolata, 9 cm. longa, 2.8 cm. lata, acuminata, basi acuta, in petiolum 1 cm. longum attenuata, margine plus minus repanda callose denticulata; flores in axillis foliorum superiorum et summorum diminutorum solitarii; folia floralia lanceolata, circiter 3 cm. longa; pedicelli filiformes, subpubescentes, 4–5 cm. longi; calycis tubus turbينات, 5-costatus, sepala subulata, glabra, erecta, 5 mm. longa; corolla virenti-lutea, glabra, 3 cm. longa, eius tubus 2 cm. longus, supra basin attenuatus, dein usque ad faucem paullum dilatatus ibique 4 mm. latus; lobi corollae lineares, inaequaliter profunde soluti, 11–12 mm. longi; staminum tubus glaber, antherae 4 mm. longae, 2 inferiores apice barbatae; capsula ellipsoidea, 7 mm. longa, valvis 2 triangularibus apice dehiscens.

Huánuco: Cueva Grande near Posuso, 3,500 meters, *Macbride* 4797, type in Herb. Field Mus.

56. *Siphocampylus palilloanus* E. Wimm. Repert. Sp. Nov. 19: 261. 1924.

Stem suffruticose, obtusely angled, hirtellous; petiole 4–7 mm. long; leaves ovate-oblong, 7 cm. long, 3 cm. wide, more or less cordate at the base, acute at the apex, undulate and callous-denticulate, rugose, shining and subhirtellous above, reticulate and hirtellous beneath; flowers corymbose and some in the axils of the upper leaves; bracts oblong, foliaceous, 10–17 mm. long; pedicels 3–4 cm. long, minutely bracteolate at the base, hirtellous; hypanthium broadly turbinate; sepals narrowly triangular, 4–5 mm. long, few-denticulate, erect; corolla (form c) lilac-red, partly perhaps orange-red, hirtellous, the tube almost equally wide, 15 mm. long, the lower lobe separated to the middle of the corolla, the 4 upper lobes less deeply separated, about 13 mm. long; stamen tube glabrous.

Cuzco: Mount Palillo near Ollantaitambo, 3,000 meters, Cook & Gilbert 1908, type.

57. *Siphocampylus parvifolius* E. Wimm., sp. nov. *S. chima-philophyllus* Schlecht. in Lechler, Berberid. Amer. Austr. 58, 1857. (nomen!).

Frutex parvus, ramosus, glaberrimus; ramuli angulati, scabri, inferne cicatriosi, superne foliosi; folia lanceolata vel paullum oblanceolata, 20 mm. longa, 5 mm. lata, apice acuta, ad basin sensim angustata in petiolum circiter 5 mm. longum, margine leviter crenata et denticulis adpressis antrorsum versis munita, firma, supra rugulosa, nitidula, subtus pallida; flores in axillis foliorum superiorum solitarii; pedicelli 4 cm. longi, supra basin bracteolis 2 subulatis ornati; calycis tubus turbinatus, 4 mm. latus, lobi calycini lineares, 3 mm. longi, integri, erecti; corolla rubra, 34 mm. longa, supra basin vix attenuata, ad faucem paullum ampliata ibique 5 mm. lata, lobi sublineares, circiter 15 mm. longi; filamenta glabra, 31 mm. longa; antherarum tubus 5 mm. longus, nigrescens, glaber, antherae 2 inferiores apice pilosopenicillatae.

Puno: Ayapata, in bushes, Lechler 1999, type.

58. *Siphocampylus parvilobus* E. Wimm. Repert. Sp. Nov. 38: 21. 1935. *S. brevidens* E. Wimm. op. cit. 29: 89. 1931, non Regel.

Branches apparently climbing, smooth, glabrous; leaves ovate-oblong or lanceolate, 8 cm. long and 3 cm. wide or 5.5 cm. long and 1.5 cm. wide, cuspidate, subrounded to acute at the base, narrowed into a petiole 8 mm. long, the margin remotely denticulate, membranous, glabrous; flowers in an abbreviated raceme, dense, secund, the floral leaves lanceolate, 3–5 cm. long, foliaceous; pedicels axillary, 20–25 mm. long, glabrous; hypanthium turbinate, its lobes denticiform, 1 mm. long; corolla red, glabrous, the tube 32 mm. long, the lobes linear, 8–10 mm. long; stamen tube glabrous, the anthers 5.5 mm. long.

Huánuco: Posuso, 2,700 meters, Pearce, type.

59. *Siphocampylus Pavonis* E. Wimm. Repert. Sp. Nov. 29: 89. 1931. *Tupa secunda* G. Don, Gen. Syst. 3: 700. 1834. *Lobelia secunda* R. & P. ex G. Don, loc. cit. *Rapuntium secundum* Presl, Prodr. Monogr. Lobel. 29. 1836, non *S. secundus* E. Wimm., 1924.

A branched, apparently climbing shrub; leaves slightly obovate-oblong to oblong, 4 cm. long, 1–1.4 cm. wide, obtuse, mucronate,

gradually narrowed to a petiole 6–8 mm. long, or obtuse at the base, the margin callous-denticulate and revolute, subcoriaceous, glossy and rugose above, scabrous beneath; flowers in secund, rather dense racemes, the rachis tuberculate; bracts lanceolate, petiolate, 5–15 mm. long; pedicels 8 mm. long, hirtellous or glabrate; hypanthium broadly turbinate, its lobes dentiform, 3 mm. long; corolla pulverulent, its tube 10 mm. long, the lobes linear, probably recurved, about 22 mm. long; stamen tube glabrous, long-exserted. Negs. 27270, 29453.

Without locality: *Parón*, type.

60. *Siphocampylus penduliflorus* Dcne. var. *asperatulus* E. Wimm. Repert. Sp. Nov. 29: 88. 1931.

Branches climbing, glabrous, finely striate, minutely tuberculate; leaves oblong-ovate, 7.6 cm. long, 3.2 cm. wide, acute, remotely denticulate, subrounded at the base, minutely scabrellous, puberulent beneath; inflorescence a secund, puberulent, short raceme; lower bracts small, foliaceous, the upper ones linear-lanceolate, 5 mm. long; pedicels 12 mm. long, scabrellous-puberulent; hypanthium hemispheric; sepals linear, 4(7) mm. long, entire, spreading; corolla purple, glabrous, 4 cm. long, rather narrow, the lobes sublinear, 12–6 mm. long; stamen tube glabrous. Neg. 27266.

Loreto: Tarapoto, summit of Mount Guayrapurima, *Spruce* 3996. The typical form occurs in Venezuela, Colombia, and Ecuador.

61. *Siphocampylus peruvianus* A. DC. in DC. Prodr. 7: 401. 1839.

A glabrous, climbing shrub; petioles 5–10 mm. long; leaves ovate-lanceolate, 4–6 cm. long, 1–1.4 cm. wide, gradually tapering to the narrow-acute tip, short-cuneate at the base, remotely and sharply serrate, entire toward the base, membranous; pedicels 2 cm. long, axillary; hypanthium broadly turbinate; sepals subulate, 3 mm. long, recurved at the apex; corolla red, subcurved, 45 mm. long, the lobes narrowly triangular, 8–10 mm. long; stamen tube glabrous. Neg. 8559.

Amazonas: Prov. Chachapoyas, *Mathews*, type.

62. *Siphocampylus phaeton* E. Wimm. Repert. Sp. Nov. 29: 88. 1931.

Stem suffruticose, erect, hollow, glabrous, 1.2–1.8 meters high; petioles 12 mm. long; leaf blades oblong, 13 cm. long, 5 cm. wide, subacute at both ends, callous-denticulate, slightly rugose, glossy

and glabrous on the upper surface, reticulate and thinly arachnoid on the lower surface; flowers solitary in the axils of the upper leaves; pedicels 9–10 cm. long; hypanthium hemispheric; sepals sublinear, 12–15 mm. long, denticulate, erect; corolla orange-red or scarlet with golden-yellow lobes, glabrous, its tube 27 mm. long, nearly straight, over the attenuate portion abruptly dilated and then almost equally wide to the throat, the upper lobes about 10, the lower 15 mm. long; stamen tube glabrous.

Ayacucho: Puytac, 3,000–3,300 meters, *Pearce*, type. Prov. Huanta, Putis, Choimacota Valley, *Weberbauer* 7531.

63. *Siphocampylus pozuzensis* E. Wimm. Repert. Sp. Nov. 29: 87. *pl.* 118, *f.* 5. 1931.

A climbing, pubescent shrub; branches striate, scabrous; petiole 5 mm. long, villous; leaves ovate-oblong, 6.5–8 cm. long, 2.7–3.5 cm. wide, acute, subrounded to obtuse at the base, callous-denticulate, scarcely pubescent above, more densely so beneath; flowers racemose; bracts filiform, 1 cm. long, some flowers in the axils of the uppermost leaves; pedicels 15–20 mm. long, pubescent; hypanthium short, turbinate, 3 mm. long, 7 mm. wide; sepals linear, 8–10 mm. long, few-denticulate, subpubescent, spreading to subreflexed; corolla red, sparsely pubescent, 6 cm. long, the tube nearly straight, 45 mm. long, the lobes sublinear, about 18 mm. long; stamen tube glabrous, 63 mm. long.

Huánuco: Above Posuso, 1,800 meters, *Pearce* 532, type.

64. *Siphocampylus puberulus* E. Wimm. Repert. Sp. Nov. 26: 13. *pl.* 72, *f.* 14. 1929.

Stem hollow, smooth, puberulent; petiole 2 mm. long; leaves ovate-lanceolate, 9 cm. long, 2.5 cm. wide, rounded at the base, gradually tapering to a cuspidate tip, densely and finely denticulate, glabrate above, densely puberulent beneath; pedicels axillary, puberulent, 1–4 cm. long, the uppermost subtending leaves lanceolate; hypanthium campanulate, puberulent; sepals subulate, 4–5 mm. long, denticulate, erect; corolla violet(?), puberulent, subcurved, 25 mm. long, the lobes about 8 mm. long; stamen tube glabrous. Neg. 31019.

Peru: Probably. Bolivia (Sorata, *Mandon*, type).

65. *Siphocampylus rosmarinifolius* G. Don, Gen. Syst. 3: 704. 1834. *Lobelia purpurea* R. & P. ex G. Don, loc. cit. *L. rosmarinifolia* Presl, Prodr. Monogr. Lobel. 36. 1836.

Stems erect, shrubby, glabrous, shining, 1 meter high; leaves linear, 8–10 cm. long, 0.4–0.5 cm. wide, narrowed to both ends, with petioles 3–4 mm. long, the margin revolute, glossy and rugose above, white-tomentose beneath; pedicels axillary, 3–8 cm. long, glabrous; hypanthium turbinate, wider at the top; sepals subulate, 10–15 mm. long, entire, erect; corolla scarlet with a yellow limb, glabrous, 35–50 mm. long, the lobes linear, 10–20 mm. long; stamen tube glabrous. Neg. 8105.

Peru: *Pavón*; *Dombey* 438; *Lobb* 378.—Junín: Prov. Tarma, on rocks below Palca, 2,400–2,700 meters, *Weberbauer* 1794. Altos de Palca, *Isern* 2289.

66. *Siphocampylus Rusbyanus* Britton, Bull. Torrey Club 19: 372. 1892.

A shrub with stiff, shining branchlets, gray-puberulent at the summit; petioles 7–15 mm. long, puberulent; leaf blades ovate, ovate-oblong, or elliptic, 6–10 cm. long, 3–5 cm. wide, acute, subcordate to rounded at the base, callous-denticulate, coriaceous, rugose and glabrous above, the venation strongly reticulate and lightly puberulent beneath; flowers in the axils of the upper leaves, these reduced in the uppermost portion to oblong bracts; pedicels 4–10 cm. long, puberulent; hypanthium broadly turbinate; sepals sublinear, 1 cm. long, denticulate, divaricate; corolla greenish and suffused with purplish, puberulent, its tube 15 mm. long, nearly equally wide (12 mm. when pressed), the lobes triangular-linear, falcate, 16–10 mm. long; filaments glabrous; anther tube 7 mm. long, slightly villous at the apex, the 2 lower anthers exceptionally not distinctly barbate.

Peru: Probably. Bolivia (Mapirí, *Rusby* 644; *Bang* 2433).

66a. *Siphocampylus Rusbyanus* var. *subtervestitus* A. Zahlbr. Bot. Jahrb. 37: 459. 1906.

A shrub 1 meter high; flowers green, reddish at the base; leaves floccose-pubescent beneath, the venation slightly prominent.

Puno: Between Tambo Azalaya and Tambo Ichubamba, between Sandía and Chunchusmayo, 1,500–1,800 meters, *Weberbauer* 1105, type.

67. *Siphocampylus salvifolius* E. Wimm. Notizbl. Bot. Gart. Berlin 10: 743. 1929.

Branches herbaceous, obtuse-angled, glabrous, pithy; leaves oblong, 7 cm. long, 2 cm. wide, subacute, narrowed at the base to a

petiole 5 mm. long, the margin revolute and callous-denticulate, firm, glabrous, glossy, and rugose above, scarcely arachnoid beneath, the veinlets reticulate; flowers solitary in the axils of the upper leaves; pedicels 6-7 cm. long, floccose or glabrescent; hypanthium depressed-globose; sepals sublinear, 8-10 mm. long, denticulate, somewhat spreading; corolla scarlet, glabrous, its tube straight, 28 mm. long, the lobes sublinear, about 12 mm. long; stamen tube glabrous.

Ayacucho: Prov. Huanta, between Puytac and Aguayunca, entrance to the mountains of Huanta, *Raimondi* 10675, type.

68. *Siphocampylus sanguineus* A. Zahlbr. Bot. Jahrb. 37: 456. 1906.

A climbing, branched shrub; leaves lanceolate, often broader in the lower third, 6-13 cm. long, 0.8-1.3 cm. wide, gradually acuminate, obtuse at the base, with a petiole 5-7 mm. long, the margin unequally denticulate, glabrous except the sparsely pubescent nerves beneath; hypanthium depressed-globose; sepals sublinear, 15-20 mm. long, entire, ciliolate, spreading; corolla blood-red, glabrous, 4 cm. long, the 2 upper lobes 1 cm. long and recurved, the 3 lower often adherent, 7 mm. long; stamen tube villous. Neg. 31021.

Amazonas: Prov. Chachapoyas, eastern wall of the valley of the Marañón above Balsas, 3,200 meters, *Weberbauer* 4285, type. Also in Ecuador.

69. *Siphocampylus scandens* (HBK.) G. Don, Gen. Syst. 3: 703. 1834. *Lobelia scandens* HBK. Nov. Gen. & Sp. 3: 309. 1819. *Lobelia obtusifolia* Willd. ex Roem. & Schult. Syst. 5: 57. 1819.

A climbing shrub with pendent, glabrous branches; leaves oblong, 45 mm. long, 16 mm. wide, obtuse, narrowed at the base into a short petiole, the margin revolute, glandular-denticulate, firm, glabrous; flowers in a long, secund raceme; bracts lanceolate, 5 mm. long; pedicels 8-10 mm. long; lobes of the turbinate calyx dentiform, 2 mm. long; corolla crimson, sparsely hirtellous, about 3 cm. long; anther tube 5 mm. long.

Peru: *Lobb.* Ecuador (near Loja, *Humboldt*, type).

70. *Siphocampylus secundus* E. Wimm. Repert. Sp. Nov. 19: 262. 1924; 29: 88. *pl.* 117, *f.* 10. 1931.

A quite glabrous, climbing shrub with pendent, angled branches; petioles 10-15 mm. long; leaf blades ovate, 3-5 cm. long, 2.2-3 cm. wide, subacute, broadly rounded to broadly cuneate at the base, the margin narrowly semidiaphanous-callous with callous teeth or lightly

crenate with interspersed teeth; inflorescence a secund, rather dense raceme; bracts small, elliptic, foliaceous, 5–15 mm. long; pedicels about 2 cm. long; hypanthium turbinate; sepals triangular, 2 mm. long; corolla whitish, about 3 cm. long, the tube 5 mm. long, the lobes linear, 23 mm. long; stamens glabrous; anther tube 11 mm. long.

Amazonas: In the Andes near Chachapoyas, *Mathews*, type.

71. *Siphocampylus soraticus* E. Wimm. Repert. Sp. Nov. 38: 23. 1935. *S. elegans* var. *boliviensis* A. Zahlbr. Bull. Torrey Club 24: 381. 1897, p. p.

A climbing shrub with slender, glabrous branches; petioles curved, 1 cm. long; leaves ovate-lanceolate, 7 cm. long, 1.6 cm. wide, gradually tapering to the acute tip, rounded at the base, somewhat remotely callous-denticulate, glabrous; pedicels remote, in the axils of the leaves, 5 cm. long; hypanthium almost none; sepals linear-lanceolate, 19–21 mm. long, 3 mm. wide at the middle, subacute, callous-denticulate, spreading to reflexed; corolla probably red, inconspicuously hirtellous, 6 cm. long, at the throat 10 mm. wide, the lobes linear, about 2 cm. long; stamen tube glabrous, the anthers 9 mm. long.

Peru: Probably occurring. Bolivia (Sorata, *Mandon* 498).

72. *Siphocampylus sparsipilus* E. Wimm. Repert. Sp. Nov. 19: 388. 1924.

A climbing shrub with hollow, terete branches, puberulent toward the ends; leaves elliptic or rarely ovate-elliptic, 7 cm. long, 3 cm. wide, acute at both ends, with a petiole 10–13 mm. long, the margin with dense, callous, salient teeth, sparsely pubescent on both surfaces; pedicels axillary, remote, puberulent, 7–8 cm. long; hypanthium depressed-globose, puberulent; sepals triangular-linear, 8 mm. long, denticulate, subrecurved at the apex; corolla scarlet, glabrous, its tube 4 cm. long, abruptly ampliate above the attenuate portion, the lobes triangular-linear, 15–6 mm. long; stamen tube glabrous.

Peru: Probably occurring. Bolivia (Unduavi, *Rusby* 636).

73. *Siphocampylus Spruceanus* A. Zahlbr. Ann. Hofmus. Wien 6: 443. 1891.

Branches woody, angled, densely leafy, scabrous and hirtellous; petioles 2 mm. long; leaves linear-lanceolate, 2–4 cm. long, 2.5–9 mm. wide, acute at the apex, acute to rounded at the base, remotely callous-denticulate, coriaceous, glabrous and glossy above, scabrous-hirtellous beneath; pedicels axillary, 20–35 mm. long, scabrous-hirtellous; hypanthium obconic, hirtellous; sepals subulate, 5 mm.

long, entire or with 1 callous tooth, scarcely hirtellous, erect; corolla garnet-red or white, glabrous, 33 mm. long, the lobes linear, 4-6 mm. long; stamen tube glabrous. Neg. 31024.

Loreto: Mountains north of Moyobamba, in sandy soil, 1,000-1,100 meters, *Weberbauer 4611*.—San Martín: Near Tarapoto, *Spruce 4860*, type. Zepelacio, 1,200-1,600 meters, *Klug 3277*.

74. *Siphocampylus stenolobus* E. Wimm. Repert. Sp. Nov. 38: 24. 1935.

A climbing shrub; leaves ovate-oblong, 9 cm. long, 3 cm. wide, acuminate-cuspidate, rounded at the base, the margin densely denticulate, the pubescence above simple, beneath stellate, especially on the nerves; petioles 8-16 mm. long, often scarcely pubescent; flowers solitary in the leaf axils; pedicels 7-10 cm. long, glabrous or pubescent below the ovary, minutely bibracteolate at the base; hypanthium very short or none; sepals linear, 15-22 mm. long, few-denticulate, spreading to reflexed; corolla blood-red, yellow toward the summit, scarcely stellate-pilose, 45 mm. long, the lobes sublinear, about 1 cm. long; stamen tube glabrous.

Cuzco: Pillahuata, Cerro de Cusilluyoc, in thickets, 2,500-3,000 meters, *Pennell 13913*, type.

75. *Siphocampylus subcarnosus* Benth. Pl. Hartw. 138. 1844.

A glabrous, climbing shrub with pendent branches; petioles stout, 11 mm. long; leaves oval, 4 cm. long, 3 cm. wide, rounded at the apex, subrounded at the base, the margin remotely callous-denticulate and revolute, subcarnose, glabrous; inflorescence a terminal, dense, secund raceme; bracts mostly fallen, otherwise minute; pedicels 12 mm. long; hypanthium turbinate, its lobes dentiform; corolla red, narrow, 37-40 mm. long, the lobes linear, about 7 mm. long; anther tube 4-5 mm. long. Neg. 27271.

Ecuador(?): *Hartweg 776*, type.

76. *Siphocampylus subcordatus* Rusby, Bull. N. Y. Bot. Gard. 8: 121. 1912.

A shrub about 2 meters high with elongate, stout, glabrous branches; petioles 3-8 mm. long, often tortuous; leaves ovate, 4-9 cm. long, 2-4.7 cm. wide, obtuse, subcordate to truncate at the base, slightly crenate with callous teeth, membranous, glabrous and glossy above, scabrous and minutely hirtellous on the veins beneath; pedicels in the axils of normal or (at the end) elliptic bracts, 35-50 mm. long; hypanthium hemispheric; sepals 12 mm. long, linear,

entire, spreading; corolla purple(?), nearly straight, puberulent, 40–45 mm. long, the lobes linear-triangular, falcate, 15–11 mm. long; filaments pubescent; anther tube 9 mm. long, white-pilose on the commissures.

Peru: Not yet found. Bolivia (La Paz, *Williams 1507; Buchtien 7529*).

76a. *Siphocampylus subcordatus* var. *dives* E. Wimm., var. nov.

Folia glaberrima, laevia, nitida, apice acuta; sepala longiora, 20 mm. longa, patentia; corolla 56 mm. longa, minute hirtella.

Bolivia; Mapiri, in rain forest, 600 meters, *Troll 2759* (type in Herb. Berlin).

77. *Siphocampylus superbus* A. Zahlbr. Bot. Jahrb. 37: 455. 1906.

Stem stout, subterete, unbranched, to 3 meters high, scabrellous, with dense scars, in the upper portion angled, pubescent; leaves dense, the lower at last reflexed, narrow-lanceolate, 16–18 cm. long, 1.3–2 cm. wide, long-acuminate, narrowed at the base into a petiole 8–12 mm. long, the margin lightly crenate and revolute, rugulose and puberulent above, pubescent beneath; flowers axillary, numerous, crowded at the summit; pedicels 14 cm. long, pubescent; hypanthium obconic, pubescent, 15 mm. long, 12 mm. wide; sepals triangular-linear, 20–30 mm. long, denticulate, pubescent, erect; corolla pale greenish, 6 cm. long, puberulent, the tube straight, slightly attenuate at the middle, 25 mm. long, the lobes sublinear-acute, about 3 cm. long; filaments pubescent, free from the corolla; anther tube 15 mm. long, 6 mm. wide, densely white-villous. Neg. 31025.

Cajamarca: Above Hacienda La Tahona near Hualgayoc, 3,100–3,300 meters, *Weberbauer 4019*, type.

78. *Siphocampylus tortuosus* A. Zahlbr. Bot. Jahrb. 37: 459. 1906.

A twining shrub; branches scabrellous-pilose, hollow; petioles hirtellous, 10–15 mm. long; leaf blade ovate to elliptic, 7–14 cm. long, 3–6 cm. wide, acuminate, subrounded to acute at the base, the margin subrepand and salient-denticulate, glabrous above, sparsely pubescent beneath; inflorescence a loose, secund raceme, the lower pedicels in the axils of normal leaves, the others in the axils of subulate bracts 2–3 cm. long, hirtellous; hypanthium obconic;

sepals subulate, 6 mm. long, hirtellous, reflexed; corolla bright purple, hirtellous, 6 cm. long, the lobes linear, about 17 mm. long; filaments glabrous; anther tube 7 mm. long, scarcely pilose. Neg. 31026.

Loreto: Mountains north of Moyobamba, 1,500 meters, *Weberbauer 4646*, type.

79. *Siphocampylus tupaeformis* A. Zahlbr. Ann. Hofmus. Wien 6: 440. 1891. *S. resinosus* Schlecht. in Lechler, Berberid. Amer. Austr. 58. 1857 (nomen!).

Stem suffruticose, 1-2 meters high, angled, pubescent, densely leafy; leaves subsessile, ovate-oblong, 5.5-11 cm. long, 2-4.8 cm. wide, gradually tapering to the acute tip, truncate to rounded at the base, subcoriaceous, the margin densely and irregularly serrulate-denticulate, scabrellous-hirtellous above, densely pubescent and reticulate beneath; flowers forming a long, dense, leafy raceme, the subtending leaves gradually passing into lanceolate bracts 5-2 cm. long; pedicels 15-40 cm. long, hirtellous; hypanthium hemispheric to turbinate, 5 mm. wide; sepals triangular, 3-4 mm. long, entire or with 1 tooth, hirtellous; corolla orange-red on the upper side, yellow on the lower, or fiery red, puberulent, 35-40 mm. long, the lobes linear, 10-15 mm. long; filaments glabrous; anther tube gray, 5 mm. long, glabrous or with few hairs at the base. Neg. 9103.

Cuzco: Urubamba Valley, 2,800-3,000 meters, *Herrera 149, 2285, 3027, 3392*. Colquipata, rocky, bush-covered banks of Río Quencomayo, 3,200 meters, *Pennell 13787*. Sacsahuamán, 3,500 meters, *Pennell 13541*.—Puno: Azángaro, on rocks, 4,000 meters, *Weberbauer 486*. Prov. Sandía, above Cuivenyo, on rocks, 3,700 meters, *Weberbauer 922*. Granja Salcedo, 4,000 meters, *Soukup 69*.—Without locality, *Lechler 1741*. Bolivia.

79a. *Siphocampylus tupaeformis* var. *reduncus* E. Wimm. Torreya 25: 95. 1925.

Differing from the type by the leaves, which on the lower surface are whitish by a very dense pilosity, the venation sharply prominent; pedicels and calyx glabrescent; sepals linear, 5 mm. long, recurved at the apex; corolla glabrous.

Cuzco: Machupicchu, 2,100 meters, *Cook & Gilbert 1020*, type.

79b. *Siphocampylus tupaeformis* var. *dulcis* E. Wimm. Repert. Sp. Nov. 29: 84. 1931.

Differing from the type by the thin-membranous leaves and minute pubescence.

Cuzco: Above Urubamba in open landscape mixed with herbs, grasses, and shrubs, 3,500 meters, *Weberbauer 4920*, type.

80. *Siphocampylus Vatkeanus* A. Zahlbr. Bull. Torrey Club 24: 377. 1897.

An erect shrub to 2 meters tall, the upper parts of the branches floccose-pulverulent; leaves ovate-oblong, 8–14 cm. long, 2.5–3.8 cm. wide, acuminate, narrowed at the base into a petiole 8–12 mm. long, the margin densely callous-denticulate, subcoriaceous, smooth and glabrous above, pale beneath and especially on the veins pubescent-pulverulent; pedicels axillary, pulverulent, 8–12 cm. long; hypanthium broadly turbinate; sepals sublinear, 10–12 mm. long, denticulate, erect; corolla greenish white, scabrellous, the tube straight, 15 mm. long, slightly attenuate at the middle, the lobes linear, 22 mm. long; filaments glabrous; anther tube gray, 11 mm. long, glabrous or scarcely short-pilose. Neg. 27274.

Cuzco: Paso de Tres Cruces, Cerro de Cusilluyoc, in thicket, shrub zone below paramo, 3,500–3,800 meters, *Pennell 13893*.—Puno: Prov. Sandía, bushy places, 3,100 meters, *Weberbauer 868*. Bolivia (Sorata, *Mandon 497*, type).

81. *Siphocampylus venustus* E. Wimm. Repert. Sp. Nov. 19: 263. 1924.

Stem herbaceous, obtusely angled, subvillous; petioles 3 mm. long; upper leaves subsessile; leaf blades ovate-oblong, 5.2 cm. long, 2 cm. wide, acute at the apex, rounded at the base, the margin unequally serrulate-denticulate, puberulent or glabrescent above, tomentulose beneath; flowers in the axils of leaves or bracts, forming a leafy raceme; pedicels to 2 cm. long, tomentose; hypanthium hemispheric, tomentose; sepals narrowly triangular, 3 mm. long, 1- or 2-denticulate, villous; corolla red, yellow on the ventral half, nearly straight, glandular and slightly villous, 28 mm. long, the lobes linear, about 12 mm. long; filaments glabrous; anther tube gray, 6 mm. long, with 5 small tufts of hairs at the base.

Junín: Near Oroya, *Kalenborn 189*, type.

82. *Siphocampylus versicolor* E. Wimm. Repert. Sp. Nov. 19: 263. 1924.

Stem suffruticose, 1 meter high, angled, sparsely floccose; petioles floccose, 1 cm. long; leaves lanceolate, 8.5–13 cm. long, 2–3.5 cm. wide, acute at both ends, the margin denticulate and narrowly revolute, thickish, rugose, glossy and glabrous above, slightly

arachnoid beneath, the venation reticulate; pedicels axillary, crowded at the summit, 12-15 cm. long, sparsely floccose, bibracteolate nearly at the middle; hypanthium turbinate, ampliate at the top, floccose; sepals linear, 16 mm. long, obsoletely denticulate, sparsely villous, erect; corolla scarlet on the upper side, orange-red on the lower, glabrous, 4 cm. long, the lobes linear, 10-15 mm. long; stamen tube glabrous.

Ayacucho: Prov. Huanta, road from Tambo via Osno to Río Apurímac, 3,400-3,500 meters, *Weberbauer 5561*, type.

83. *Siphocampylus veteranus* E. Wimm. Repert. Sp. Nov. 19: 264. 1924. *S. scabrifolius* Schlecht. in Lechler, Berberid. Amer. Austr. 58. 1857 (nomen!).

A shrub or tree 2-9 meters high, the older bark very corky, leafless except the branch tips; odor skunk-like; leaves lanceolate, 8-9 cm. long, 1.6-2 cm. wide, acuminate to acute at the tip, narrowed into a petiole 8 mm. long, more or less densely denticulate, membranous, glabrous on both surfaces, often scabrellous beneath; pedicels axillary, 10-11 cm. long, with 2 subulate bractlets at the base; hypanthium broadly turbinate; sepals linear, 6-7 mm. long, subentire, glabrous, spreading; corolla greenish white or sometimes reddish toward the base on the upper side, glabrous, its tube 8 mm. long, almost equally wide (7 mm.), the lobes downward gradually deeper disjoined, the upper lobes 20, the lateral 18, the lowest 16 mm. long; stamen tube glabrous; anthers gray, 10 mm. long. Neg. 9087.

Ayacucho: Prov. Huanta, road from Tambo via Osno to Río Apurímac, 3,100-3,400 meters, *Weberbauer 5579*, type.—Cuzco: Paucartambo to Tres Cruces, Cerro de Cusilluyoc, in thicket, 3,200-3,400 meters, *Pennell 14146*.—Huánuco: Upper canyon head, 6 miles south of Mito, 3,150 meters, 1860.—Puno: Tabina, *Lechler 2073*. Prov. Carabaya, *Weddell 4632*.

84. *Siphocampylus Weberbaueri* A. Zahlbr. Bot. Jahrb. 37: 456. 1906.

A shrub to 3 meters high, branched only at the base; stems hollow, terete, glabrescent, whitish-villous toward the ends; leaves dense, membranous, oblong, 12-14 cm. long, 3-4.5 cm. wide, acuminate, narrowed at the base into a tomentose petiole 6-8 mm. long, callous-denticulate, puberulent above, white-tomentose beneath; pedicels axillary, 10-17 cm. long, floccose, bibracteolate at the base; hypanthium depressed-globose, pubescent; sepals linear, entire, denticulate, pubescent, 9-15 mm. long; corolla (form d) greenish white, reddish-

suffused, pubescent, its tube 16 mm. long, 4 mm. wide at the middle, the lobes sublinear, falcate, 22–15 mm. long; filaments glabrous; anther tube 13 mm. long, 4 mm. wide, pilose, naked at the apex. Neg. 31029.

Cajamarca: Above Hacienda La Tahona near Hualgayoc, 3,100–3,300 meters, *Weberbauer 4019*, type.

85. *Siphocampylus Williamsii* Rusby, Bull. N. Y. Bot. Gard. 8: 122. 1912.

Branches slender, angled, tuberculate, glabrous; leaves lanceolate to lance-linear, 4–7 cm. long, 0.6–0.8 cm. wide, acute at both ends, narrowed to a short petiole or sessile, the margin remotely callous-denticulate and narrowly revolute, firm, glabrous; pedicels solitary in the axils of somewhat smaller leaves, 2–7 cm. long; hypanthium turbinate; sepals 5–6 mm. long, triangular-linear, obtuse, with 1 callous tooth on either side; corolla rose-purple, glabrous, straight, 35 mm. long; anther tube glabrous, 5 mm. long.

Peru: *Haenke*. Bolivia.

8. LAURENTIA Michx.

Slender herbs, erect or caespitose. Leaves petiolate, rarely sessile, alternate, rarely radical and rosulate. Flowers in a terminal, loose raceme or solitary in the leaf axils. Calyx lobes 5. Corolla tube entire, often funnel-shaped, mostly straight, its limb 5-parted, bilabiate or somewhat regular. Filaments connate, distinct at the base, free from the corolla (*Eulaurentia*) or adnate to the corolla tube at about the middle (*Isotoma*), included in the corolla tube. Two lower anthers setigerous or penicillate-pilose at the apex. Capsule obovoid or about cylindric, 2-locular, dehiscent by 2 valves at the summit, mostly inferior, rarely superior (as in the species of Peru). Seeds ellipsoid, brown, hardly 1 mm. long.—Distributed chiefly in South Africa, Australia, from Mexico to Bolivia, and in the Mediterranean lands. In Peru as yet only 2 species are known. Corolla white, large, the tube narrow-cylindric.....1. *L. longiflora*. Corolla small, violet or pink.....2. *L. micrantha*.

1. *Laurentia longiflora* (L.) E. Wimm., comb. nov., non Schlechter. *Lobelia longiflora* L. Sp. Pl. 930. 1753; Bot. Mag. pl. 2568; Bot. Reg. pl. 1200. *Rapuntium longiflorum* Mill. Dict. ed. 8. No. 7. 1768. *Hippobroma longiflora* G. Don, Gen. Syst. 3: 717. 1834. *Isotoma longiflora* Presl, Prodr. Monogr. Lobel. 42. 1836.

An erect, coarse, pubescent herb 30–60 cm. high; leaves oblong-lanceolate to obovate-lanceolate, 8–17 cm. long, 2–5 cm. wide, acute, narrowed at the base into the indefinite, margined petiole, the margin repand-dentate to irregularly sinuate-dentate; pedicels solitary in the axils, 5–8 mm. long, with 2 bractlets above the base; hypanthium obconic, 9 mm. long; sepals linear, denticulate, erect, 10–13 mm. long; corolla white, inodorous, puberulent, the tube entire, cylindric, 7–11 cm. long, 2–3 mm. wide, the 5 lobes nearly equal, linear-lanceolate, glabrous within, about 2 cm. long; filaments glabrous, adnate at about the middle of the corolla tube; anther tube 4 mm. long, hairy at the apex; capsule oblong-ovoid, pendulous.—Flowering nearly throughout the year. A very poisonous plant!

Loreto: Iquitos and Caballo-cocha on the Amazon River, *Williams 1429, 2126*. Yurimaguas, lower Río Huallaga, waste places, 135 meters, *Killip & Smith 29117*. Brazil to the West Indies and Mexico. “Revienta-caballos.”

2. *Laurentia micrantha* (HBK.) A. Zahlbr. Bull. Torrey Club 24: 386. 1897, non A. DC. in DC. Prodr. 7: 411. 1839. *Lobelia micrantha* HBK. Nov. Gen. & Sp. 3: 316. 1819; A. DC. op. cit. 373. *Lobelia subtilis* HBK. op. cit. 317. *Lobelia ruderalis* et *L. Draba* Willd. ex R. & S. Syst. 5: 56, 67. 1819. *Rapuntium micranthum* et *R. subtile* Presl, Prodr. Monogr. Lobel. 25. 1836. *Lobelia parviflora* Mart. & Gal. Bull. Acad. Brux. 9: 41. 1842. *Lobelia minutiflora* Kunze, Linnaea 16: 318. 1842. *Laurentia michoacana* Robinson, Proc. Amer. Acad. 26: 167. 1891.

An annual, erect herb 8–30 cm. high; stem angled, simple and ramose, glabrous or puberulent; lower leaves ovate to ovate-oblong, 10–35 mm. long, 8–23 mm. wide, the upper gradually reduced, lanceolate, sessile, obtuse to acute at the tip, rounded to cuneate at the base, dentate, glabrous to sparsely pubescent; flowers in a terminal, loose raceme; bracts linear to subulate, shorter than the (5–12 mm. long) pedicels; ovary superior, oblong-ovoid; sepals linear, erect, mostly glabrous, 2 mm. long; corolla 4–6 mm. long, its tube pale, the lobes dull bluish violet or pale pink; anther tube hardly 1 mm. long, the 2 lower anthers pilose at the tip; capsule oblong-ovoid, superior, bearing at the tip the faded corolla, 5 mm. long, 2 mm. wide. Neg. 9110.

Amazonas: Andes of Chachapoyas, *Mathews 908*.—Ayacucho: Prov. Huanta, below Yanamonte, *Weberbauer 5605*. Aina, between Huanta and Río Apurímac, open hillside, 750–1,000 meters, *Killip & Smith 22684*.—Cuzco: Ollantaitambo, 3,800 meters, *Cook &*

Gilbert 348. Río Paucartambo below Paucartambo, moist, grassy slope, 2,900–3,200 meters, *Pennell 18798*.—Huánuco: Yanahuanca, shrubby southern slope, *1166*. María del Valle, 2,100 meters, *3555*. Ambo, stony river flat, 2,100 meters, *3196*.—Junín: Uspachaca, southeastern canyon slope, 2,500 meters, *1297*.—Lima: Viso, 2,700 meters, *763*.—Department unknown: Chinchín (*Dombey*, det. A. DC.). Mexico to Bolivia; Chile (?).

2a. *Laurentia micrantha* var. *longibracteata* E. Wimm. Rev. Sudamer. Bot. 2: 104. 1935. *L. pedunculata* Brandeg. Univ. Calif. Publ. Bot. 6: 73. 1914.

Stem, petiole, and sepals ciliate; pedicels 1–2 cm. long, as long as or shorter than the sublinear bracts.

Amazonas: Between Suta and Leimebamba, *Raimondi 1811*. Chachapoyas, *Mathews*.—Cuzco: Ollantaitambo, field along river, 2,850 meters, *Pennell 13681*. Cuzco, *Herrera 2586a*.—Puno: Sandía, 2,200 meters, *Weberbauer 583*. Mexico; Guatemala; Colombia; Venezuela; Ecuador; Brazil; Paraguay.

2b. *Laurentia micrantha* var. *ovatifolia* (Robinson) E. Wimm., comb. nov. *L. ovatifolia* Robinson, Proc. Amer. Acad. 26: 166. 1891.

Lower leaves ovate, subcordate to truncate at the base; bracts much shorter than the pedicels.

Cajamarca: Prov. Jaén, valley of Río Tabaconas near Hacienda Charape, grassy steppe, 1,200–1,300 meters, *Weberbauer 6262*. Mexico.

9. LOBELIA L.

Annual or perennial, slender or stout, low or tall herbs. Leaves alternate, petioled, rarely sessile, undivided, usually with callous teeth at the margin. Flowers solitary in the leaf axils or in terminal racemes, pedicellate. Hypanthium hemispheric or turbinate, inferior or sometimes nearly free, with 5 distinct sepals. Corolla tubular, its tube split on the upper side to the base; limb 5-lobed, bilabiate, the 2 upper lobes smaller, erect to recurved, or sometimes as long as the lower lobes and ascendent; lower lip 3-lobed and spreading, often tuberculate at the base. Filaments free from the corolla, completely or upward connate into a narrow tube. Anther tube cylindric, the 2 lower anthers shorter and barbate at the tip. Style filiform, included in the stamen tube; stigma 2-lobed. Fruit a 2-locular capsule, dehiscent at the apex by 2 valves. Seeds numerous, mostly ellipsoid, very small.—Distributed in both hemispheres.

Stout herbs; leaves oblong, acute, sinuate-dentate, sessile, decurrent; raceme leafy.....3. *L. decurrens*.

Slender herbs; leaves petioled or sessile; flowers solitary or in lax, bracteate racemes.

Prostrate, creeping plants; flowers axillary.....5. *L. nana*.

Erect plants; flowers in terminal, lax racemes.

Ovary and capsule nearly superior.....8. *L. zalapensis*.

Ovary and capsule inferior, only the capsule valves overtopping the calyx lobes.

Corolla lobes linear-acute.....2. *L. collina*.

Corolla lobes obovate.

Glabrous plants.

Plant growing in marshy soil; bracteoles distinct, filiform, divaricate; all anthers pilose at the tip.

1. *L. aquatica*.

Plant not of marshes; bracteoles inconspicuous; only the 2 lower anthers barbate.....7. *L. tenera*.

Puberulent or short-hirsute plants.

All anthers barbate at the tip; pedicels with 2 long bracteoles at the middle.....4. *L. holotricha*.

Only the 2 lower anthers barbate; pedicels without bracteoles.....6. *L. subpubera*.

1. *Lobelia aquatica* Cham. Linnaea 8: 211. 1833. *L. dominicensis* A. DC. in DC. Prodr. 7: 359. 1839. *L. bracteolata* Vatke, Linnaea 38: 721. 1874.

A quite glabrous plant 8-20 cm. high, growing in aquatic or marshy places; stems angular, succulent; leaves sessile, linear-lanceolate, the lower small, ovate, 8 mm. long and 6 mm. wide, or oblong to lanceolate, 30 mm. long and 3.5 mm. wide, obtuse to acute, remotely denticulate; flowers axillary to racemose; pedicels 1-3 cm. long, with 2 filiform, divaricate bractlets 2-3 mm. long at the base; hypanthium turbinate; sepals subulate, 2 mm. long, suberect; corolla 5-6 mm. long, bluish or lilac, white-spotted in the throat; tube barbate at the orifice; seeds 3-edged.

San Martín: Tarapoto, Spruce 4404. More frequent in Venezuela, Brazil, Paraguay, and West Indies.

2. *Lobelia collina* HBK. Nov. Gen. & Sp. 3: 312. 1819. *L. liniifolia* and *L. phyteumoides* Willd. ex Roem. & Schult. Syst. 5: 57. 1819.

A glabrous, procumbent-ascendent, branched herb; leaves sessile, linear-lanceolate, acute, callous-denticulate, 15–20 mm. long, 2–4 mm. wide; flowers in terminal, secund racemes; bracts linear, as long as the (2–4 mm. long) pedicels; hypanthium semi-ovoid; sepals subulate, entire, erect, 2 mm. long; corolla bluish(?), 1 cm. long, the lobes linear, the upper 5 mm., the lower 3 mm. long.

Without locality: Rare on dry hills, *Humboldt* (Herb. Willd. 3959, type of *L. linifolia*; and 3966, type of *L. phyteumoides*).

3. *Lobelia decurrens* Cav. Icon. 6: 13. pl. 521. 1801, non Roth. *L. foliosa* HBK. Nov. Gen. & Sp. 3: 310. 1819. *Rapuntium decurrens* et *R. foliosum* Presl, Prodr. Monogr. Lobel. 24. 1836.

A coarse, erect, simple herb 80–120 cm. high; stem and leaves glabrous, but the flowers pubescent (type and also *L. decurrens* var. β . A. DC.); leaves oblong, 13 cm. long, 4.5 cm. wide, acute, truncate or narrowed at the base and on the stem broadly dentate-decurrent, the margin deeply, sharply, and often doubly dentate; flowers in a leafy raceme, the subtending leaves above often small and lanceolate, cuspidate; pedicels 8–13 mm. long, pubescent; hypanthium hemispheric, 7 mm. in diameter, pubescent like the 5 lobes, these triangular-linear, 12–15 mm. long, pubescent, deeply linear-dentate; corolla 3 cm. long, purplish lavender, pubescent, the lower lip 3-lobed (lobes narrow-triangular, 5 mm. long), the upper lobes linear, 17 mm. long; anther tube 7 mm. long, glabrous, the 2 lower anthers barbate at the tip.

Ancash: Below Pamparomás, between Samanca and Caraz, near a brook, 2,000–2,400 meters, *Weberbauer 3188*. Apurímac, *Herrera 1207*.—Lima: Between Narkima and Matucana on the margin of a clover field, 2,200–2,370 meters, *Weberbauer 44*. Matucana, 2,400 meters, 99. Obrajillo, *Wilkes Exped.* Along Río Chillón near Viscas, rocky bank, 1,800–2,000 meters, *Pennell 14317*. San Bartolomé, *Rose 18678*.

3a. *Lobelia decurrens* var. *jaensis* E. Wimm., var. nov.

Differt a typo caule et foliis longe pubescentibus, corolla 45 mm. longa, sed longitudo corollae saepe variat inter 26–45 mm.

Department unknown: "Copiose in Luvini collibus," *Pavón* (type in herb. Delessert). *Mathews 658*.—Cajamarca: Prov. Jaén, San Felipe, *Weberbauer*. Also in Chile and Ecuador. "Contoya."

4. *Lobelia holotricha* E. Wimm. Repert. Sp. Nov. 38: 87. 1935.

An erect herb, ramose, puberulent; leaves sessile or the lower petioled, obovate-lanceolate to linear, 23 mm. long, 3 mm. wide,

obtuse, gradually narrowed to the base, entire, inconspicuously denticulate, the upper leaves linear, 6–12 mm. long, 1 mm. wide, nearly appressed; flowers in loose, terminal racemes; bracts linear, as long as the pedicels, these 5 mm. long, erect, bearing 2 bracteoles below the calyx; hypanthium obconic; sepals linear, 4–5 mm. long, denticulate; corolla dark blue, slightly puberulent, 10 mm. long; stamen tube 4 mm. long, included in the corolla tube; filaments distinct, as long as the anthers; anther tube puberulent on the back, barbate at the orifice.

Huánuco: Six miles south of Mito, in grasslands, 3,300 meters, 1906, type.

5. *Lobelia nana* HBK. Nov. Gen. & Sp. 3: 317. pl. 272. 1819.

A small, perennial herb with prostrate, rooting stems or shoots; leaves radical and cauline, petioled, roundish, spatulate, or obovate-oblong, narrowed at the base into a petiole 2–4 mm. long or rarely to 18 mm. long; leaf blades 5–16 mm. long, 2–8 mm. wide, often short-hirsute above, beneath glabrous, entire, with obsolete callosities at the margin; pedicels radical and axillary, 1-flowered, 3–6 cm. long, glabrous; hypanthium semiovoid; sepals triangular, 3–4 mm. long, entire, erect; corolla bluish, 7–10 mm. long, the upper lobes sublinear, the lower obovate; anther tube glabrous, the 2 lower anthers with 2 longer and a few shorter hairs.

Puno: *Raimondi*. Bolivia (Sorata, *Mandon 1463*); frequent in Mexico.

5a. *Lobelia nana* var. *flagelliformis* Wedd. Chlor. And. 2: 13. 1857. *L. Cymbalaria* Griseb. Goett. Abh. 19: 200. 1874.

Differing from the type only by much longer shoots and pedicels, also the leaves are often longer-petioled and mostly dentate.

Puno: Between Chupa and Huanacán, *Raimondi 9515*. Frequent in Bolivia and Argentina, but apparently rare in Peru.

5b. *Lobelia nana* var. *cymbalarioides* (A. Zahlbr.) E. Wimm., comb. nov. *L. cymbalarioides* A. Zahlbr. Bot. Jahrb. 37: 461. 1906. *Pratia boliviensis* A. DC. in DC. Prodr. 7: 340. 1839.

Particularly distinguished from the type and the preceding variety by the short pedicels, 12–16 mm. long.

Junín: Between Yauli and Pachichaca on the Lima-Oroya line, rocky mats, 4,100 meters, *Weberbauer 324*, type of *L. cymbalarioides*. Prov. Tarma, La Oroya, grassy mat on river bank, 3,900 meters, *Weberbauer 2591b*. La Oroya, moist soil, 3,100–4,200 meters, *Kalenborn 55*. Bolivia.

6. *Lobelia subpubera* Wedd. Chlor. And. 2: 14. 1857.

Plants 3–10 cm. high, puberulent or glabrescent, with short stolons; lower leaves spatulate to lanceolate, 10 mm. long, 3–5 mm. wide, acute, narrowed at the base to a short petiole 2–4 mm. long, callous-denticulate, puberulent above or glabrate, glabrous beneath; upper leaves lanceolate to linear, sessile; flowers in terminal, few-flowered racemes; pedicels 4–6 mm. long, about equaling the bracts; hypanthium turbinate; sepals subulate, 3–4 mm. long, erect, ciliolate; corolla bluish, 10 mm. long.

Peru: Type form probably occurring. Ecuador (*Jameson 463*).

6a. *Lobelia subpubera* var. *Weberbaueri* (A. Zahlbr.) E. Wimm. Repert. Sp. Nov. 29: 51. 1931. *L. Weberbaueri* A. Zahlbr. Bot. Jahrb. 37: 462. 1906.

Somewhat taller (20 cm.), with larger corolla (12–14 mm. long). Neg. 30980.

Cajamarca: Pass of Coimolache near Hualgayoc, 4,000–4,100 meters, *Weberbauer 3955*, type. Ecuador.

7. *Lobelia tenera* HBK. Nov. Gen. & Sp. 3: 314. 1819.

An erect, glabrous herb 15–30 cm. high with creeping rhizomes and short stolons, producing several stems with few leaves; leaves spatulate to linear (the upper), 20 by 8 mm., 30 by 7 mm., or 15 by 2 mm., obtuse to acute, remotely denticulate, narrowed at the base into a short petiole or sessile; raceme leafless below to the length of 3–6 cm.; flowers racemose, few, on pedicels 11–17 mm. long; bracts linear, denticulate, 2–8 mm. long; hypanthium turbinate; sepals subulate, 3 mm. long, suberect; corolla 10 mm. long, light blue, bluish violet, or lilac; anther tube glabrous. Neg. 9117.

Ayacucho: Prov. Huanta, Cueva de Puitac, *Raimondi 9448*. Puna de Huanta, *Raimondi 10876, 13003*. Yanahuara, grass steppe, 3,800 meters, *Weberbauer 7595*.—Cajamarca: Prov. Chota, between Cajamarca and Yanacancha, *Raimondi 9994*. Celendín, *Osgood & Anderson 56*. Prov. Hualgayoc, above San Miguel, 2,600–2,700 meters, *Weberbauer 3899*.—Cuzco: Piñasniocj, Panticalla Pass, 3,600 meters, *Cook & Gilbert 1823*. Pillahuata, 2,800–3,000 meters, *Pennell 14121*.—Huánuco: Prov. Huamalíes, Altos de Chacabamba, *Raimondi 12350, 12698*. Fifteen miles northeast of Huánuco, common on grassy slopes, 3,750 meters, *1493, 2194*.—Junín: Altos de Tarma, *Raimondi 11802*. Prov. Tarma, mountains east of Palca, 2,700–3,000 meters, *Weberbauer 2452*. La Oroya, *Kalenborn 181*. La Oroya, loose, moist, lime soils, *978*.—Without data: *Mathews 3021*.

7a. *Lobelia tenera* var. *belladonna* E. Wimm., var. nov.

Corolla obscure caeruleo-violacea, basi labii inferioris albo-maculata et viridescenti-tuberculata, lobis 2 superioribus erecto-recurvis, 8 mm. longis, lobis inferioribus obovatis, mucronatis, 8 mm. longis, 6 mm. latis; tubus, staminalis 7 mm. longus.

Ayacucho: Pampalca, between Huanta and Río Apurímac, open hillside, 3,200 meters, *Killip & Smith 22217*, type in Herb. Field Mus.

8. *Lobelia xalapensis* HBK. Nov. Gen. & Sp. 3: 315. 1819. *L. monticola* HBK. op. cit. 316. *L. palmaris* Willd. ex Roem. & Schult. Syst. 5: 56. 1819. *Rapuntium affine* Presl, Prodr. Monogr. Lobel. 25. 1836. *L. mollis* Graham, Edinb. Phil. Journ. 185. 1829. *L. ocimoides* Kunze, Linnaea 24: 178. 1851. *L. Cliffortiana* var. *xalapensis* Gray, Syn. Fl. N. Amer. 2, pt. 1: 7. 1878.

An erect, puberulent or glabrescent, annual herb 19–30 cm. high; leaves remote, petioled, ovate, 3 cm. long, 2.4 cm. wide, obtuse to acute, subcordate to cuneate at the base, dentate to somewhat sinuate, the upper leaves lanceolate, sessile, often subpubescent beneath; flowers in loose racemes; bracts lanceolate to linear, small, often ciliate; pedicels 5–10 mm. long, puberulent; hypanthium very short and turbinate or none; sepals subulate, 2 mm. long; corolla 5–6 mm. long, purplish, lilac, or white; capsule quite or nearly superior, oblong or ovoid, 4–5 mm. long.—The related *L. Cliffortiana* L. is completely glabrous and further distinguished by its inferior ovary and capsule. It is an endemic herb of the West Indian Islands, and often occurs as a cultivated plant. Neg. 9111.

Huánuco: Yanahuanca, 3,000 meters, 1166.—Junín: La Merced, trail edge, 600 meters, 5351.—Lima: Viso, 2,700 meters, 763.—San Martín: Tarapoto, *Spruce 4200*.—Loreto: Above Pongo de Manseriche, *Mexia 6319*. Widely distributed from Mexico to Argentina and Bolivia.

LYSIPOMINAE

Small herbs. Corolla tube entire. Filaments free from or adnate to the corolla. Capsule 1-locular, or perhaps incompletely bilocular in the inferior portion, opening at the apex by an orbicular, convex, deciduous operculum.—The occurrence of this group is confined to the high Andes of South America. It includes only the following genus.

10. *LYSIPOMIA* HBK.

Lysipoma A. DC. in DC. Prodr. 7: 349. 1839, excl. *Hypsela*; *Rhizocephalum* Wedd.

Leaves rosulate or rarely alternate, entire, stiff or somewhat fleshy. Flowers subsessile or peduncled, crowded at the center of the plant or solitary in the leaf axils. Ovary 1-celled. Hypanthium inferior, mostly obconic. Calyx lobes 5. Corolla tubular, with a 5-parted, subbilabiate limb, the lobes triangular-lanceolate. Stamens connate into a narrow tube, the 2 inferior anthers a little shorter than the others, terminated by 2 bristles or many short hairs. Stigma bilobed, ciliate outside. Capsule obconic or ellipsoid. Seeds numerous, adnate to parietal placentae.

A. Corolla short-tubular, 3–10 mm. long; filaments epigynous or adnate at the base; capsule completely 1-celled.

1. Subgenus *Eulysipomia*.

Plants acaulescent or subacaulescent; leaves stellate-crowded or rosulate.

Peduncles shorter than the flowers or almost obsolete.

Sepals very unequal in length.

Sepals glabrous.

Leaves linear, rounded, like the sepals, at the tip.

1. *L. acaulis*.

Leaves linear-lanceolate, acute like the sepals.

2. *L. acuta*.

Sepals ciliate, acute, narrow-triangular. . . . 3. *L. globularis*.

Sepals equal in length.

Leaves lanceolate, petiolate. 3. *L. aretioides*.

Leaves linear, sessile. 14. *L. pumila*.

Peduncles about as long as or much longer than the flower.

Leaves almost acicular, sessile. 4. *L. brachysiphonia*.

Leaves lanceolate, long-petiolate. 7. *L. gracilis*.

Plants caulescent.

Stem creeping; leaves sparse.

Sepals unequal; leaves oblanceolate, entire. 13. *L. montioides*.

Sepals equal; leaves spatulate-oblong, remotely crenate, almost abruptly petiolate. 5. *L. glandulifera*.

Stem erect, moss-like; leaves imbricate.

Sepals very unequal. 15. *L. sphagnophila*.

Sepals equal.

Leaves reflexed; flowers peduncled. 11. *L. Lehmannii*.

Leaves erect to spreading; flowers subsessile. . . . 8. *L. hirta*.

- A. Corolla tube 14-25 mm. long, the lower portion narrow-cylindric, then ampliate; filaments inserted in the corolla above the middle; capsule 1-locular, apparently 2-locular in the inferior portion.

2. Subgenus *Rhizocephalum*.

Plants acaulescent; rosulate leaves and flowers radical.

Leaves linear, obtuse, entire, glabrous. 12. *L. linearifolia*.

Leaves lanceolate or spatulate-lanceolate, acute, pinnatifid, dentate to entire, mostly pubescent. 9. *L. laciniata*.

Plants caulescent, with short branchlets; leaves dense, acicular.

10. *L. laricina*.

1. *Lysipomia acaulis* HBK. Nov. Gen. & Sp. 3: 321. pl. 267. 1819. *Lysipoma acaulis* A. DC. loc. cit. *Lobelia androsacea* Humb. Distr. Georg. Pl. Proleg. 39. 1817 (nomen!) Willd. ex R. & S. Syst. 5: 41. 1819.

Plant 2 cm. high; leaves stellate-crowded, rigid, sessile, linear with rounded tip, slightly dilated at the base and ciliate, 10 mm. long, 1.25 mm. wide; flowers short-peduncled, crowded at the center; sepals unequal, ovate-oblong, rounded, not ciliate, the uppermost 2.5 mm. long, the lowest 1.25 mm. long; corolla sordid-white, 4-5 mm. long.

Junín: Hacienda Arapi, near Yauli, on stony mats, 4,400 meters, *Weberbauer 342* (det. Zahlbruckner). South America, *Humboldt 2252* type; Ecuador.

2. *Lysipomia acuta* E. Wimm., sp. nov.

Plantula 15 mm. alta, acaulis; folia radicalia, stellatim expansa, lineari-lanceolata, cum petiolo marginato, ciliolato 8-12 mm. longa, 1.2 mm. lata, acuta, glabra vel supra evanescenter hirtella; flores in centro crebri, pedunculo primo brevissimo, demum ad 5 mm. elongato; hypanthium obconicum, 5-costatum, glabrum; sepala inequalia, ovato-acuta, 2-1 mm. longa; corolla pallide luteola vel virenti-lutea, 3 mm. longa, lobi anguste triangulares; antherarum tubus nigrescens, circiter 1 mm. longus, antherarum 2 inferiores apicē bisetosae; capsula obconica, 1-locularis, 3 mm. longa; semina obscuro-fusca, ellipsoideo-cylindrica, obtusa, scrobiculata, 0.8 mm. longa.

Without locality: *Pavón*.—Ancash: Prov. Huari, Andes west of Pichiu, stony places, 4,400-4,500 meters, *Weberbauer 2944*. Prov. Patasca, Pushuquilca Valley, high Andean grass steppe, 4,100 meters, *Weberbauer 7243*.—Huancavelica: Prov. Tayacaja, mountains on the right side of Río Manatara, south of Surcubamba, 4,200 meters,

Weberbauer 6476.—Junín: Cerro de Pasco, grassy slope, 4,200 meters, 3079.

3. *Lysipomia aretioides* HBK. Nov. Gen. & Sp. 3: 321. *pl. 267, f. 1*. 1819. *Lobelia glandulosa* Willd. ex R. & S. Syst. 5: 41. 1819. *L. Willdenowiana* R. & S. loc. cit. *L. adenophora* R. & S. (nomen!).

A little plant with very abbreviated stem, 1–2 cm. high; leaves stellately crowded, with several flowers in the center, spatulate-lanceolate, 3–5 mm. long, acute, entire, glabrous or subciliate, narrowed into the short, often ciliate petiole; peduncles radical, 1–2 mm. long; hypanthium oblong-obovoid; sepals triangular, acute, ciliate, equal, 1.5 mm. long; corolla brownish yellow, 4 mm. long, the lobes ciliate.

Peru: *Humboldt*, type of *Lobelia glandulosa*. Ecuador (Andes near Loja, *Herb. Kunth*, type).

4. *Lysipomia brachysiphonia* (A. Zahlbr.) E. Wimm., comb. nov. *Rhizocephalum brachysiphonium* A. Zahlbr. Bot. Jahrb. 37: 461. 1906.

Plants caespitose, 2–3 cm. high; leaves dense, sessile, linear, 15–30 mm. long, hardly 1 mm. wide, with 3 callous teeth on each side, glabrous; peduncles radical, 10–15 mm. long; sepals subulate, obtuse, 2 mm. long, with 1–2 callous teeth; corolla pale lilac, 12 mm. long, its tube narrow, 6 mm. long, the upper lobes somewhat narrower than the 3 lower and ciliate; filaments adnate to the corolla base, 7 mm. long, the 2 lower anthers with 2 bristles at the tip. Neg. 9076.

Huánuco: Prov. Huamallies, mountains southeast of Monzón, in bog, 3,000–3,200 meters, *Weberbauer 3716*, type.

4a. *Lysipomia brachysiphonia* var. *brevifolia* (A. Zahlbr.) E. Wimm., comb. nov. *Rhizocephalum brachysiphonium* var. *brevifolium* A. Zahlbr. loc. cit. *Lysipomia subulata* G. Don, Gen. Syst. 3: 717. 1834(?).

Leaves shorter, 4–10 mm. long; sepals ovate, subacute, with 1, rarely 2 teeth on each side; corolla whitish, brown-dotted at the throat.

Junín: Prov. Tarma, mountains west of Huacapistana, open, swampy places between bushes, 3,000–3,200 meters, *Weberbauer 2081*.—Without locality: *Pavón*.

5. *Lysipomia glandulifera* Schlecht. in Lechler, Berberid. Amer. Austr. 58. 1857 (nomen!). *Pratia glandulifera* Wedd. Chlor.

And. 2: 11. *pl.* 45, *f.* A. 1857. *Hypsela glandulifera* Benth. & Hook. *f.* Gen. Pl. 2: 559. 1876.

A caespitose plant with creeping and rooting stems; leaves oblong, 3–5 mm. long, 2 mm. wide, obtuse, slightly crenate with callous teeth between the crenations, rarely subentire, narrowed at the base into a white petiole 5–7 mm. long, glabrous; flowers solitary in the leaf axils, short-peduncled; hypanthium oblong-obovoid; sepals sublinear, 1–2 mm. long, obtuse, equal, erect; corolla funnel-shaped, glabrous, 6 mm. long, white, the 2 upper lobes completely white, the lower lobes white with 2 violet dots, in the throat yellow with violet dots; filaments greenish; anther tube violet-black, the 2 lower anthers terminated by 2 bristles; capsule 1-celled; seeds compressed-ovoid, brown, scarcely 1 mm. long. Neg. 9079.

Cuzco: Paso de Tres Cruces, 3,800 meters, *Pennell 13863*.—Puno: Tabina, on the highest mountain ridges, *Lechler 2076*, type. Bolivia.

6. *Lysipomia globularis* E. Wimm., sp. nov.

Plantula caespitosa, consistens e rosulis globularibus consociatis, solo adpressis, 14–22 mm. altis et latis; folia sessilia, rigida, linearia, 5–6 mm. longa, 1.5 mm. lata, apice acuta, integra, glabra vel versus apicem ciliolata, densissima; flores subsessiles, in centro congesti, folia vix superantes; hypanthium obconicum, 2 mm. longum; sepala parum inaequalia, anguste triangularia, acuta, minute ciliata, 1.5 mm. longa; corolla albida(?), glabra, vix 4 mm. longa, tubus corollae fere aequilatus, dorso usque ad medium fere fissus, lobi 5 corollae triangulares, subaequales, 1.5 mm. longi; filamenta in tubum angustum connata, epigyna; antherarum 2 inferiores setis 2 apiculatae; capsula unilocularis, operculo apice dehiscens; semina subglobosa, atro-fusca, tenuiter striata, 1 mm. longa.

Cajamarca: Cutervo, *Raimondi 4694*, type in herb. Berlin.

7. *Lysipomia gracilis* E. Wimm., comb. nov. *Rhizocephalum gracilis* E. Wimm. Repert. Sp. Nov. 26: 4. *pl.* 72, *f.* 18. 1929.

A glabrous plant 8–12 cm. high; leaves radical, rosulate, lanceolate, acute, crenulate, with callous teeth in the crenations, narrowed to the petiole, 15–20 mm. long; peduncles radical, compressed, 6–9 cm. long, ampliate at the summit into the obconic hypanthium; calyx lobes subulate, entire, 7 mm. long; corolla reddish(?), pale within, 13 mm. long, the limb bilabiate, 7 mm. long; stamen tube 7–8 mm. long, the 2 lower anthers with 2 bristles at the tip. Neg. 9077.

Libertad: Pacasmayo to Moyobamba, near Frailecocha, 3,300 meters, *Stuebel 26a*, type.

8. *Lysipomia hirta* E. Wimm. Repert. Sp. Nov. 38: 87. 1935.

A sphagnum-like, erect plant 4–8 cm. high; leaves sessile, densely imbricate, rigid, erect to spreading, hirtellous, ovate-lanceolate, acute, entire, 4 mm. long, 1.5 mm. wide; flowers subsessile, axillary, crowded at the summit of the stem; hypanthium obconic, hirtellous; sepals narrowly triangular, 2 mm. long, acute, hirtellous; corolla white(?), glabrous, 7 mm. long, its tube split on the back beyond the middle, the lobes lanceolate; filaments epigynous; 2 lower anthers with 2 bristles at the apex.

Cajamarca: Near Cutervo, *Raimondi* 3161a, type.

9. *Lysipomia laciniata* A. DC. in DC. Prodr. 7: 349. 1839. *Rhizocephalum Candollii* var. *laciniatum* Wedd. Chlor. And. 2: 12. 1857.

Plant rosette-shaped, 3–4 cm. high; leaves lanceolate, 15 mm. long, 3–5 mm. wide, subacute, narrowed at the base into a winged petiole 15–20 mm. long, pinnatifid, sparsely hirtellous, rarely glabrous; peduncles radical, glabrous, 10–14 mm. long; hypanthium obliquely obconic; sepals filiform-subulate, 2–3 mm. long; corolla white with purple dots at the base of the lower corolla lobes, mostly pubescent within, glabrous without, the tube narrow-cylindric, ampliate toward the summit, 15 mm. long, the lobes lance-oblong, about 4 mm. long and 2 mm. wide; filaments inserted in the corolla at the middle; anther tube 3.5 mm. long, the 2 inferior anthers terminated by 2 longer and some short hairs. Neg. 8102.

Peru: Probably. Bolivia (La Paz).

9a. *Lysipomia laciniata* var. *vulgaris* (Wedd.) E. Wimm., comb. nov. *Rhizocephalum Candollii* var. *vulgare* Wedd. Chlor. And. 2: 12. pl. 46, upper f. B. 1857.

Leaves irregularly dentate or subentire, above sparsely pubescent or glabrous.

Ayacucho: Prov. Huanta, Mount Razahuilca, matted puna, 4,300–4,400 meters, *Weberbauer* 7496.—Cuzco: Paucartambo Valley, Hacienda Lauramar, 4,500 meters, *Herrera* 2320.—Puno: Ayapata, damp soil, *Lechler* 1956. Apacheta, between Ayapata and Ituata, *Raimondi* 11597. Bolivia; Colombia.

10. *Lysipomia larinica* E. Wimm., nom. nov. *Lobelia subulata* Benth. Pl. Hartweg. 137. 1844. *Rhizocephalum subulatum* Benth. & Hook. f. Gen. Pl. 2: 549. 1876.

A caespitose plant, 2–8 cm. high, with short stem and short branchlets, these decumbent and toward the ends densely leafy; leaves

sessile, linear-subulate, about 12 mm. long, hardly 1 mm. wide, subobtusate, the margin revolute, entire, glabrous; flowers subsessile, solitary in the leaf axils; hypanthium oblong-obconic; sepals subulate, 3 mm. long, erect, glabrous; corolla glabrous, white, 15 mm. long, its tube narrowly cylindric, ampliate toward the throat, the limb bilabiate, the lobes narrow-triangular, the lower lobes purplish-striate at the base; filaments adnate to the corolla at the middle, the 2 lower anthers terminated by 2 bristles and some shorter hairs.

Ecuador: Near Loja, Cerro de San Francisco, *Hartweg 773*, type. South America, *André K1523*.

Lysipomia subulata G. Don differs, according to the author, by its subulate radical leaves, hairy at the base, and the flowers on peduncles 2.5 cm. long, perhaps also by the short-tubular corolla.

11. *Lysipomia Lehmannii* Hieron. Repert. Sp. Nov. 14: 185. 1915.

An erect, sphagnum-like, simple plant 8–14 cm. high; leaves sessile, reflexed, dense, rigid, with short, appressed hairs on the upper surface, linear, 5 mm. long, 0.75 mm. wide, obtuse; flowers at the top of the stem; the pedicels solitary in the leaf axils, 7–8 mm. long; hypanthium obconic; sepals oblong-linear, 2 mm. long, subacute, glabrous; corolla white and often pink-suffused, somewhat funnel-shaped, 9 mm. long; 2 lower anthers biaristate. Neg. 30981.

Peru: Probably. Ecuador (eastern Andes of Loja, in wet places on the ridges, 3,000–3,500 meters, *Lehmann 4822*, type).

12. *Lysipomia linearifolia* E. Wimm., sp. nov. *Rhizocephalum Candollii* var. *ciliatum* Wedd. Chlor. And. 2: 12. pl. 46, lower f. B. 1857(?).

Radix fibrillosa; folia radicalia, tenuia, glaberrima, linearia, 3–6 cm. longa et 1–1.5 mm. lata, obtusiuscula, integra, non ciliata; pedunculi solitarii, axillares, 5–25 mm. longi, inconspicue fere trans-euntes in calicem; sepala tenera, sublinearia, 1–2 mm. longa; corolla longe tubulosa, extus glabra, 35 mm. longa, tubus corollae in parte inferiore angustissime cylindricus (24 cm. longus et 1 mm. latus), in superiore parte infundibulariter ampliatus (6 mm. longus, 4 mm. latus), limbus 5-partitus, bilabiatus, intus sparse pubescens, lobi 2 superiores lanceolati, ciliati, albi(?), lobi 3 inferiores oblongi, acuti, non ciliati, intus versus faucem purpureo-maculati, circiter 5 mm. longi; filamenta parte superiore, corollae inserta; antherarum tubus 2 mm. fere longus, nigrescens, antherae 2 inferiores setis 2 munitae.

Puno: Ayapata, *Raimondi*.—Bolivia: North Yungas, pass toward Santillani, 4,100 meters, *Buchtien* 737. Unduavi, 3,400 meters, *Buchtien* 9063, type in herb. Mus. Vienna. Unduavi, 2,400 meters, *Rusby* 2445.

13. *Lysipomia montioides* HBK. Nov. Gen. & Sp. 3: 320. pl. 266, f. 2. 1813. *Lysipoma montioides* A. DC. in DC. Prodr. 7: 349. 1839. *Lobelia limoselloides* Willd. ex. R. & S. Syst. 5: 41. 1819.

A small, creeping, rooting, glabrous plant; leaves thickish, entire, lance-spatulate, obtuse, 2–4 mm. long, 1–1.5 mm. wide, narrowed at the base into a marginate petiole 2–4 mm. long; pedicels solitary in the leaf axils, 3–5 mm. long; sepals ovate, obtuse, somewhat unequal, about 1 mm. long, shorter than the obovoid hypanthium; corolla short-tubular, 3 mm. long, with a somewhat bilabiate limb; 2 lower anthers biaristate. Neg. 9080.

South America: *Humboldt*, type of *Lobelia limoselloides*. Ecuador; Colombia.

14. *Lysipomia pumila* (Wedd.) E. Wimm., comb. nov. *Rhizocephalum pumilum* Wedd. Chlor. And. 2: 13. 1857.

A glabrous plant 2 cm. high; leaves radical, thickish or rigid, linear, 15 mm. long, 1–2 mm. wide, obtuse with callous apex, entire; peduncles radical, 2–4 mm. long, hypanthium obovoid; sepals narrowly triangular, with an obtuse, callous tip, 1 mm. long; corolla funnel-shaped, 11 mm. long, white, purple-striate in the throat, the limb bilabiate; 2 lower anthers with 2 longer and many short hairs at the tip. Neg. 30982.

Lima: High Andes above Lima, in bogs, 4,500 meters, *Weberbauer* 5155. Bolivia.

15. *Lysipomia sphagnophila* Griseb. in Lechler, Berberid. Amer. Austr. 58. 1857 (nomen!).

Planta erecta, parce ramosa, sphagniformis, 3–6 cm. alta; caules dense foliati; folia rigida, linearia, 5–10 mm. longa, 1–2 mm. lata, apice obtusa, basi saepe paulum dilatata, integerrima, plus minus ciliata, erecta usque patula; flores in vertice caulis congesti; pedicelli axillares, 2–5 mm. longi, ancipites; hypanthium oblique obconicum, 2–3 mm. longum; sepala valde inaequalia, 2–0.25 mm. longa, triangulari-linear, obtusa, ciliolata vel glabrata; corolla viridescens-lutea, 2–3 mm. longa, bilabiata, lobi superiores parum longiores; antherarum tubus nigrescens, vix 1 mm. longus, antherae 2 inferiores setulis terminatae. Neg. 9081.

Puno: Sachapata, in sphagnum, *Lechler 2641*, type.—Cuzco: Paso de Tres Cruces, Cerro de Cusilluyoc, open, grassy paramo, 3,800–3,900 meters, *Pennell 13865*.

CALYCERACEAE

This small family, with flowers aggregate into heads and more or less mixed with bracts or paleae in the manner of the Compositae, from which, however, it differs in having the ovule suspended from the tip of the cell, fruits or achenes topped by the calyx, etc., is represented in Peru apparently by only four species, although there are a number in Chile and Argentina, some of them extending into Bolivia. Perhaps the best account of the family as yet is by Miers, *Contr. Bot.* 2: 1 et seq., who, however, divides it into several more genera than the four ordinarily recognized today: *Acicarpa*, *Boopis*, *Moschopsis*, and *Calycera*. As all the genera may be found eventually in Peru, it may be remarked that *Boopis* resembles *Calycera* but that in *Boopis* the fruits are all alike, the calyx not changing.

The well known teasel, *Dipsacus fullonum* L., with rigid, ovoid heads, and *Scabiosa atropurpurea* L., "ambarina," often cultivated in flower gardens, with finely divided leaves and soft heads of pale purple or white flowers, may both occur occasionally as escapes. They are placed in a family separated from the Calyceraceae because the filaments are not united at the base into a ring, the Dipsacaceae. Outer achenes concrete, bearing spines at the apex. . . . 1. *Acicarpa*. Outer achenes free.

Achenes, at least the outer ones, armed with spines . . . 2. *Calycera*.

Achenes unarmed 3. *Moschopsis*.

1. ACICARPHA Juss.

Annual or perennial herbs with spatulate or obovate leaves. Involucral bracts united below with the receptacle, this sometimes provided with small palae. Central flowers sterile, the outer 2 or 3 series maturing more or less united achenes which are somewhat sunken in the conic or elongate receptacle, and crowned with the definitely lengthened, more or less spinescent calyx teeth.—Robert Brown renamed the genus *Acicarpa* as more appropriate, which action was followed by Miers.

Plants procumbent, the leaves entire *A. procumbens*.

Plants erect, the leaves toothed or lacinate *A. tribuloides*.

***Acicarpa procumbens* Less.** *Linnaea* 6: 527. 1831.

Glabrous, usually with many much branched stems; leaves narrowly spatulate, attenuately petiolate, 2.5–4 cm. long, 4–8 mm. wide, glaucous, 3-nerved; peduncles opposite the leaves, about 2 cm. long, the solitary head 1 cm. thick, the 5–6 involucre leaves about 4 mm. long; achenes corniculate-spinose, 5-winged, the spines about 1 mm. long.—*Acicarpa spathulata* R. Br., similar, has broader leaves and spines about 1 cm. long. Illustrated, *Mart. Fl. Bras.* 6, pt. 4: *pl.* 104.

Cuzco: In the punas, Prov. Paucartambo (*Herrera*). Brazil; Argentina. "Chchiqui."

***Acicarpa tribuloides* Juss.** *Ann. Mus. Hist. Nat. Paris* 2: 348. *pl.* 58. 1803.

Leaves sinuately or laciniately dentate, reticulate, cuneate-oblong or the lower spatulate, the upper sessile; larger leaves to 2 cm. wide or wider; involucre leaves 5 and 1–2 cm. long, the globose head, excluding the spines, about 6 mm. thick, the spines 4 mm. long.—Illustrated, *Miers, Contr. Bot.* 2: *pl.* 52. Flowers pale greenish yellow.

Cuzco: Near Cuzco (*Herrera* 16). Sacsahuamán, 3,500 meters, grassy places on hill, *Pennell* 13584; *Soukup* 46. Extending to Brazil and Uruguay. "Estrella-quisca."

2. CALYCERA Cav.

Similar to *Acicarpa*, but the receptacle smaller; flowers often few, fertile; achenes free, part of them armed.—The name was originally written *Calicera*.

***Calycera pulvinata* Rémy,** *Ann. Sci. Nat.* III. 6: 352. 1846. *Anomocarpus pulvinatus* Miers, *Contr. Bot.* 2: 31. 1860.

Stemless, the branches of the woody rhizomes terminating in a rosette of leaves in the center of which develops the head of densely glomerate flowers; leaves long-petioled, 2–5 cm. long, oblong-obovate, serrate or crenate; involucre campanulate, with 5–7 irregular lobes; flowers perfect, separated by narrow bracts; calyx teeth 5, in some flowers becoming long, sharp spines.—Illustrated, *Wedd. Chlor. And.* 2: *pl.* 48.

Cuzco: High mountains (*Gay*). Bolivia.

3. MOSCHOPSIS Phil.

Several species of the genus are known, chiefly in Patagonia.

Moschopsis monocephala (Phil.) Reiche, Bot. Jahrb. 29: 118. 1900. *Boopis monocephala* Phil. Anal. Mus. Nac. Chile, Bot. 1891: 30. 1891.

Plants perennial, stemless; leaves all radical, numerous, forming a large rosette, spatulate, with long, broad petioles, rounded at the apex, coarsely dentate, the teeth tipped with short spines, glabrous or nearly so; heads very large, sessile, as much as 6 cm. broad; flowers white.

Moquehua: Cordillera east of Carumas, 4,500 meters, prostrate on sandy soil, *Weberbauer 7357*. Also in Chile.

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